BOSTON AND MAINE RAILROAD

STANDARD PLANS

COMPILED IN OFFICE OF CHIEF ENGINEER
BOSTON, MASS.

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ISSUE	DATE
A	JUNE 12, '41.
B	FEB. 12, '48.

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PLAN	
DRAWN BY P.L.D.	
CHECKED BY J.F.F.	
CORRECT J.J.R.	

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C-PLATE CHANGES.
D-NOTE ON GUARD RAIL TIE T.O.
E-TIE SPACING. FROG CHANGES. GUARD RAIL DISTANCE. 6" TIE STEPS

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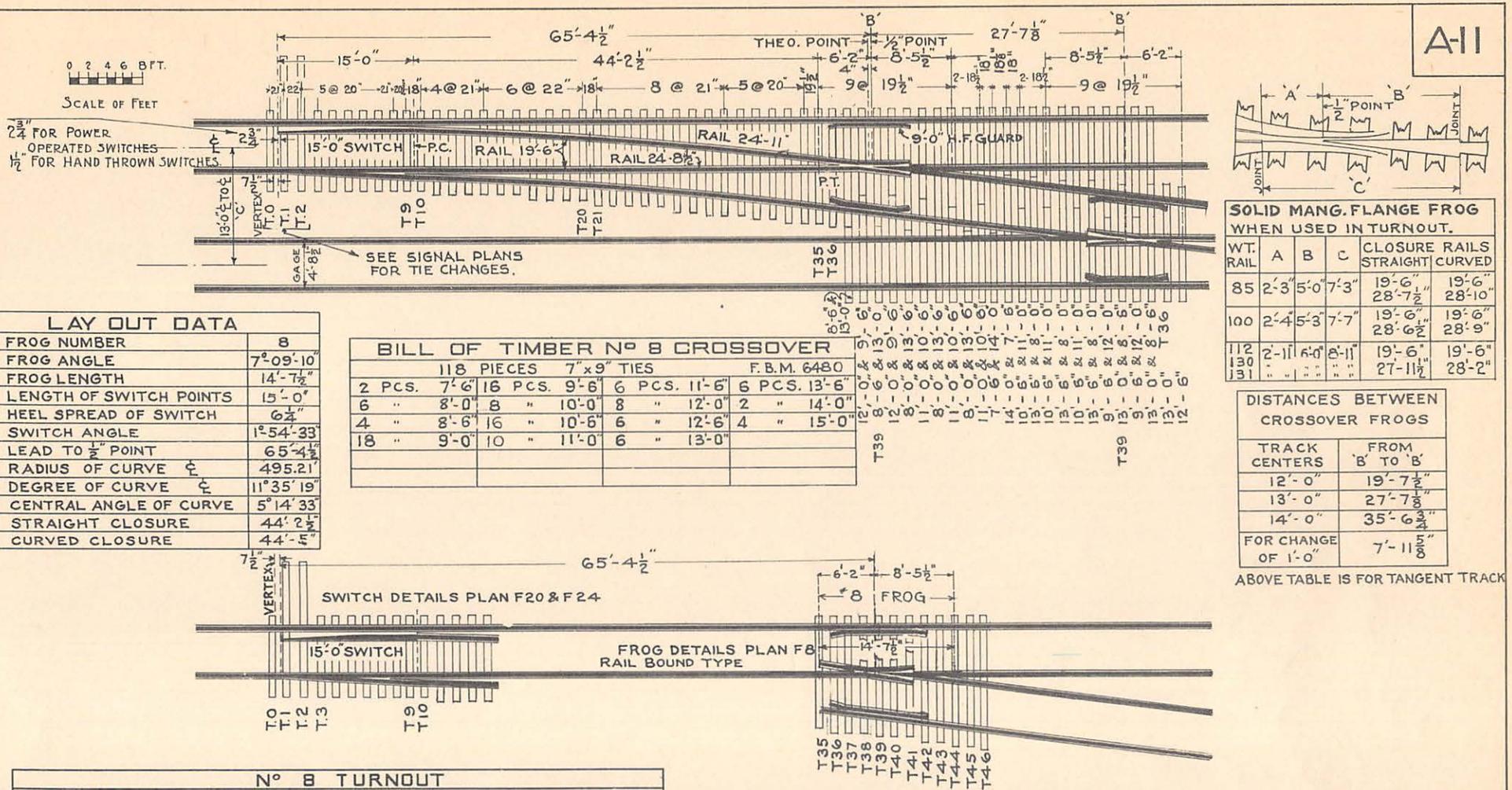


SOLID MANG. FLANGE FROG WHEN USED IN TURNOUT.

WT. RAIL	A	B	C	CLOSURE RAILS STRAIGHT	CLOSURE RAILS CURVED
85	2'-3"	5'-0"	7'-3"	19'-6" 28'-7½"	19'-6" 28'-10"
100	2'-4"	5'-3"	7'-7"	19'-6" 28'-6½"	19'-6" 28'-9"
112	2'-11"	6'-0"	8'-11"	19'-6" 27'-11½"	19'-6" 28'-2"
130	"	"	"		
131	"	"	"		

DISTANCES BETWEEN CROSSOVER FROGS

TRACK CENTERS	FROM 'B' TO 'B'
12'-0"	19'-7½"
13'-0"	27'-7⅞"
14'-0"	35'-6¾"
FOR CHANGE OF 1'-0"	7'-11⅝"

ABOVE TABLE IS FOR TANGENT TRACK

LAY OUT DATA

FROG NUMBER	8
FROG ANGLE	7°-09'-10"
FROG LENGTH	14'-7½"
LENGTH OF SWITCH POINTS	15'-0"
HEEL SPREAD OF SWITCH	6¼"
SWITCH ANGLE	1°-54'-33"
LEAD TO ½" POINT	65'-4½"
RADIUS OF CURVE ℄	495.21'
DEGREE OF CURVE ℄	11°35'19"
CENTRAL ANGLE OF CURVE	5°14'33"
STRAIGHT CLOSURE	44'-2¾"
CURVED CLOSURE	44'-5"

BILL OF TIMBER Nº 8 CROSSOVER

118 PIECES 7"x9" TIES F.B.M. 6480

2	PCS.	7'-6"	16	PCS.	9'-6"	6	PCS.	11'-6"	6	PCS.	13'-6"
6	"	8'-0"	8	"	10'-0"	8	"	12'-0"	2	"	14'-0"
4	"	8'-6"	16	"	10'-6"	6	"	12'-6"	4	"	15'-0"
18	"	9'-0"	10	"	11'-0"	6	"	13'-0"			

Nº 8 TURNOUT

47 PIECES 7"x 9" TIES F.B.M. 2780

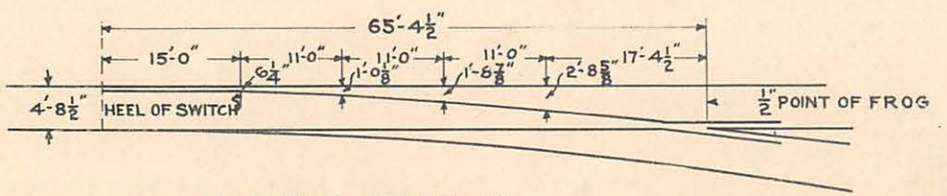
9	PCS.	9'-0"	T0 T8 TO T10	2	PCS.	11'-0"	T26 TO T27	3 PCS. 13'-0" T36 TO T38
6	"	9'-6"	T11 TO T16	3	"	11'-6"	T28 " T30	3 " 13'-6" T39 " T41
4	"	10'-0"	T17 TO T20	2	"	12'-0"	T31 " T32	2 " 14'-0" T42 " T43
5	"	10'-6"	T21 TO T25	3	"	12'-6"	T33 " T35	2 " 14'-6" T44 " T45
					"			3 " 15'-0" T1-2 - T46 *

* 13'0" WITH 3'6" CONNECTING ROD.
15'0" " 5'6" & 6'0" " "
WHEN USED WITH SWITCH STANDS.

GUARD RAIL

DISTANCE, GAGE LINE OF FROG TO FACE OF GUARD RAIL MUST BE 4'-6⅝" REGARDLESS OF TRACK GAGE.

IF GAGE OF TRACK IS INCREASED, THE FLANGEWAY IS CORRESPONDINGLY INCREASED.



OFF SET DIAGRAM

BOSTON AND MAINE R.R.

STANDARD

Nº 8 TURNOUT & CROSSOVER

WITH 15 FT. SWITCH

APPROVED

F. F. Fisher
ENGINEER M OF W

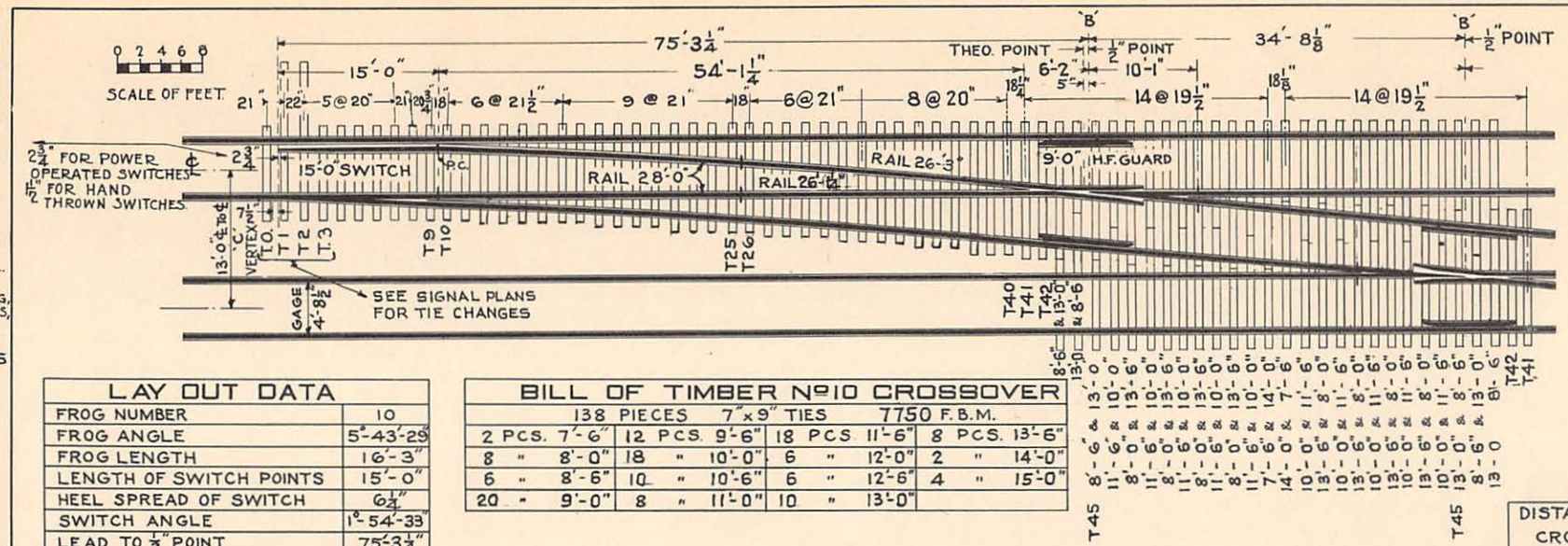
W. Buckler
CHIEF ENGINEER

PLAN	
DRAWN BY P.L.D.	
CHECKED BY F.A.H.	
CORRECT J.J.R.	

ISSUE	DATE
A	6-22-29
B	3-1-30
C	2-3-36

B-NOTE ON GUARD RAIL. TIE T.O.
C-TIE SPACING, FROG CHANGES, GUARD RAIL DISTANCE. 6" TIE STEPS

A13



LAY OUT DATA

FROG NUMBER	10
FROG ANGLE	5°-43'-29"
FROG LENGTH	16'-3"
LENGTH OF SWITCH POINTS	15'-0"
HEEL SPREAD OF SWITCH	6¼"
SWITCH ANGLE	1°-54'-33"
LEAD TO ½" POINT	75'-3¼"
RADIUS OF CURVE ℄	807.67'
DEGREE OF CURVE	7°-05"
CENTRAL ANGLE OF CURVE	3°-48'-52"
STRAIGHT CLOSURE	54'-1¼"
CURVED CLOSURE	54'-3"

BILL OF TIMBER Nº10 CROSSOVER

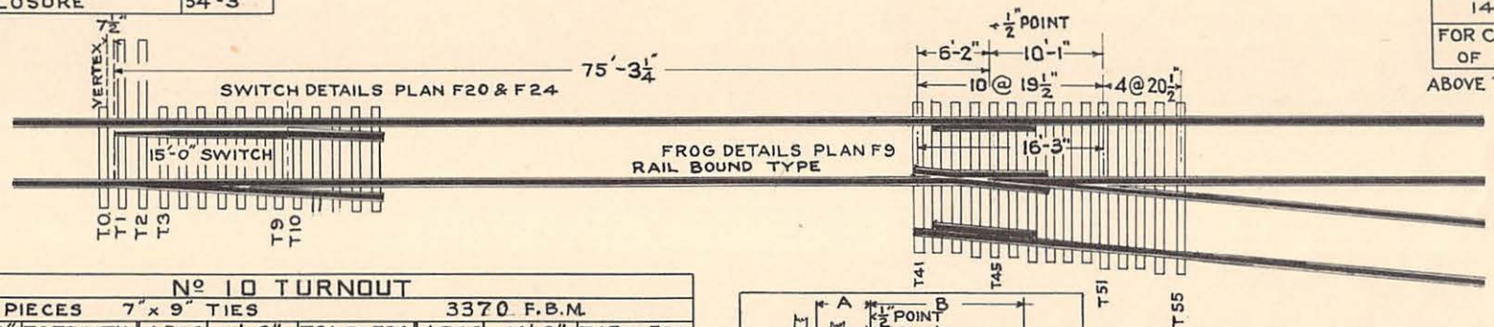
138 PIECES 7"x9" TIES 7750 F.B.M.

2 PCS.	7'-6"	12 PCS.	9'-6"	18 PCS	11'-6"	8 PCS.	13'-6"
8 "	8'-0"	18 "	10'-0"	6 "	12'-0"	2 "	14'-0"
6 "	8'-6"	10 "	10'-6"	6 "	12'-6"	4 "	15'-0"
20 "	9'-0"	8 "	11'-0"	10 "	13'-0"		

DISTANCES BETWEEN CROSSOVER FROGS

TRACK CENTERS	FROM 'B' TO 'B'
12'-0"	24'-8⅜"
13'-0"	34'-8⅛"
14'-0"	44'-7⅞"
FOR CHANGE OF 1'-0"	9'-11¾"

ABOVE TABLE IS FOR TANGENT TRACK



GUARD RAIL

DISTANCE, GAGE LINE OF FROG TO FACE OF GUARD RAIL MUST BE 4'-6 5/8" REGARDLESS OF TRACK GAGE.

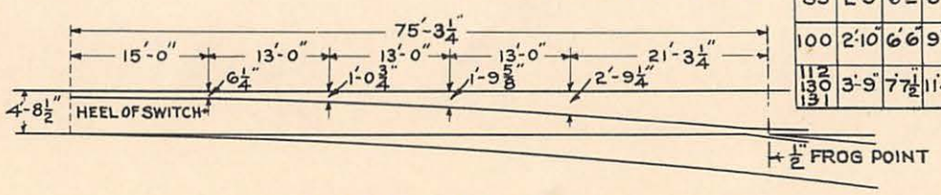
IF GAGE OF TRACK IS INCREASED, THE FLANGEWAY IS CORRESPONDINGLY INCREASED.

Nº 10 TURNOUT

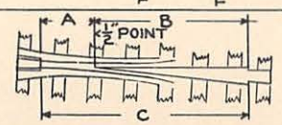
56 PIECES 7"x9" TIES 3370 F.B.M.

10 PCS.	9'-0"	T.O. T3 TO T11	4 PCS.	11'-6"	T31 TO T34	4 PCS.	14'-0"	T47 TO T50
6 "	9'-6"	T12 " T17	3 "	12'-0"	T35 " T37	3 "	14'-6"	T51 " T53
4 "	10'-0	T18 " T21	3 "	12'-6"	T38 " T40	4 "	15'-0"	T1, T2, -T54, T55
5 "	10'-6"	T22 " T26	3 "	13'-0"	T41 " T43			*
4 "	11'-0"	T27 " T30	3 "	13'-6"	T44 " T46			

* 13'-0" WITH 3'-6" CONNECTING ROD.
15'-0" " 5'-6" & 6'-0" " "
WHEN USED WITH SWITCH STANDS.



OFFSET DIAGRAM



SOLID MANG. FLANGE FROG WHEN USED IN TURNOUT

WT. RAIL	A	B	C	CLOSURE RAILS STRAIGHT	CLOSURE RAILS CURVED
85	2'-9"	6'-2"	8'-11"	28'-0" 29'-6¼"	28'-0" 29'-8"
100	2'-10"	6'-6"	9'-4"	28'-0" 29'-5¼"	28'-0" 29'-7"
112 130 131	3'-9"	7'-7½"	11'-4½"	28'-0" 28'-6¼"	28'-0" 28'-8

BOSTON AND MAINE R. R.

STANDARD

Nº 10 TURNOUT & CROSSOVER

WITH 15 FT. SWITCH

APPROVED

F. F. Fitzgerald
ENGINEER M. OF W.

J. P. Buckley
CHIEF ENGINEER

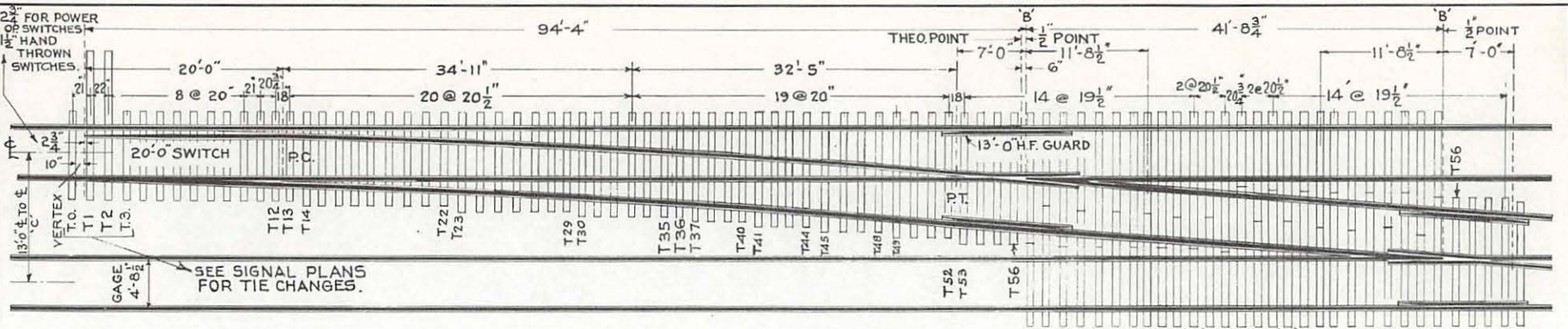
PLAN	
DRAWN BY P.L.D.	
CHECKED BY SWH.	
CORRECT. J.J.R.	

ISSUE	DATE
A	11-11-29
B	3-6-30
C	2-3-36
D	2-23-51

B NOTE ON GUARD RAILS. TIE CHANGES.

C TIE SPACING. FROG CHANGES GUARD RAIL DISTANCE. 6" TIE STEPS. D-TIE SPACING & GEN. REV.

A14



LAY OUT DATA

FROG NUMBER	12
FROG ANGLE	4°-46'-19"
FROG LENGTH	18'-8 1/2"
LENGTH OF SWITCH POINTS	20'-0"
HEEL SPREAD OF SWITCH	6 1/4"
SWITCH ANGLE	1°-25'-57"
LEAD	94'-4"
RADIUS OF CURVE	1156.17
DEGREE OF CURVE	4°57'26"
CENTRAL ANGLE OF CURVE	3°20'22"
STRAIGHT CLOSURE	67'4
CURVED CLOSURE	67'-5 1/2"

BILL OF TIMBER Nº 12 CROSSOVER

166 PIECES 7"x9" TIES 9308 F.B.M.

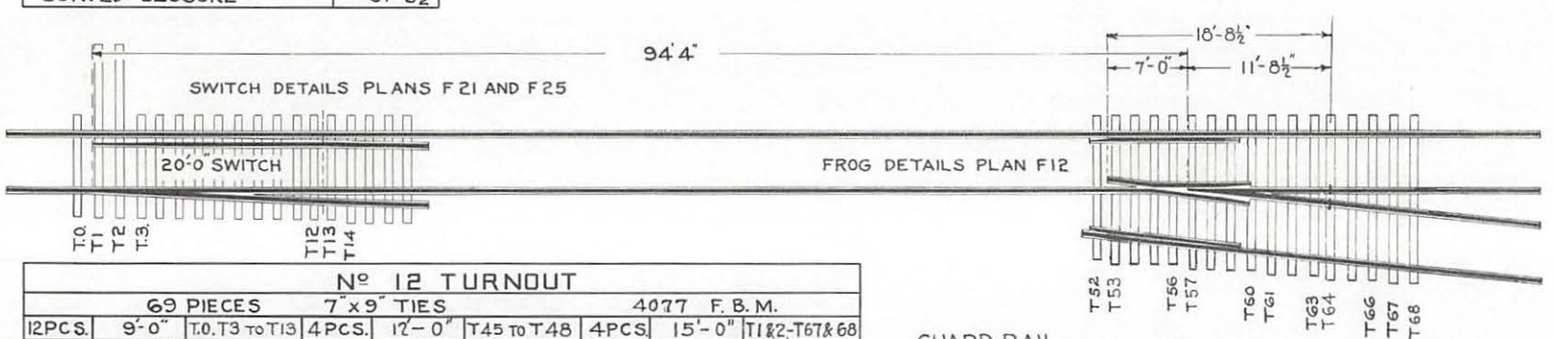
2 PCS.	7'-6"	18 PCS.	10'-6"	10 PCS.	13'-6"	
10	8'-0"	12 "	11'-0"	2 "	14'-0"	
2	8'-6"	14 "	11'-6"	4 "	15'-0"	
26	9'-0"	8 "	12'-0"			
18	9'-6"	10 "	12'-6"			
20	10'-0"	10 "	13'-0"			

* - 13'-0" WITH 3'-6" CONNECTING RODS
15'-0" " 5'-6" & 6'-0"

DISTANCES BETWEEN CROSSOVER FROGS

TRACK CENTERS	FROM 'B' TO 'B'
12'-0"	29'-9"
13'-0"	41'-8 3/4"
14'-0"	53'-8 1/2"
FOR CHANGE OF 1'-0"	11'-11 3/4"

ABOVE TABLE IS FOR TANGENT TRACK



Nº 12 TURNOUT

69 PIECES 7"x9" TIES 4077 F.B.M.

12 PCS.	9'-0"	T.0. T3 TO T13	4 PCS.	12'-0"	T45 TO T48	4 PCS.	15'-0"	T1&2-T67&68
9 =	9'-6"	T14 TO T22	4 =	12'-6"	T49 = T52			*
7 =	10'-0"	T23 TO T29	4 =	13'-0"	T53 = T56			
7 =	10'-6"	T30 TO T36	4 =	13'-6"	T57 = T60			
4 =	11'-0"	T37 TO T40	3 =	14'-0"	T61 = T63			
4 =	11'-6"	T41 = T44	3 =	14'-6"	T64 = T66			

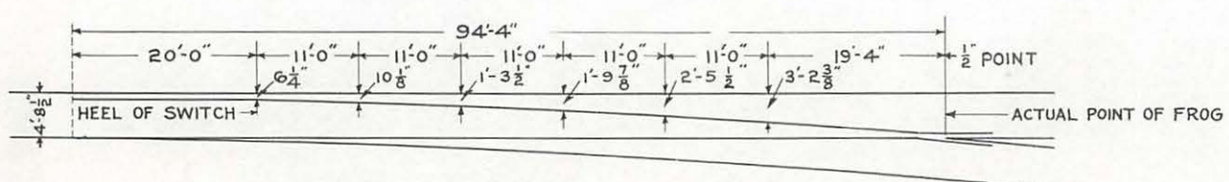
NOTE

THIS #12 TURNOUT AND CROSSOVER LAYOUT TO BE USED ONLY WHEN AUTHORIZED BY THE ENGINEER M. OF W.

GUARD RAIL

DISTANCE, GAGE LINE OF FROG TO FACE OF GUARD RAIL MUST BE 4'-6 5/8" REGARDLESS OF TRACK GAGE. IF GAGE OF TRACK IS INCREASED, THE FLANGEWAY IS CORRESPONDINGLY INCREASED.

BOSTON AND MAINE R. R.



OFFSET DIAGRAM

Nº 12 TURNOUT & CROSSOVER

WITH 20 FT. SWITCH

APPROVED

H. F. Fifield
ENGINEER M. OF W.

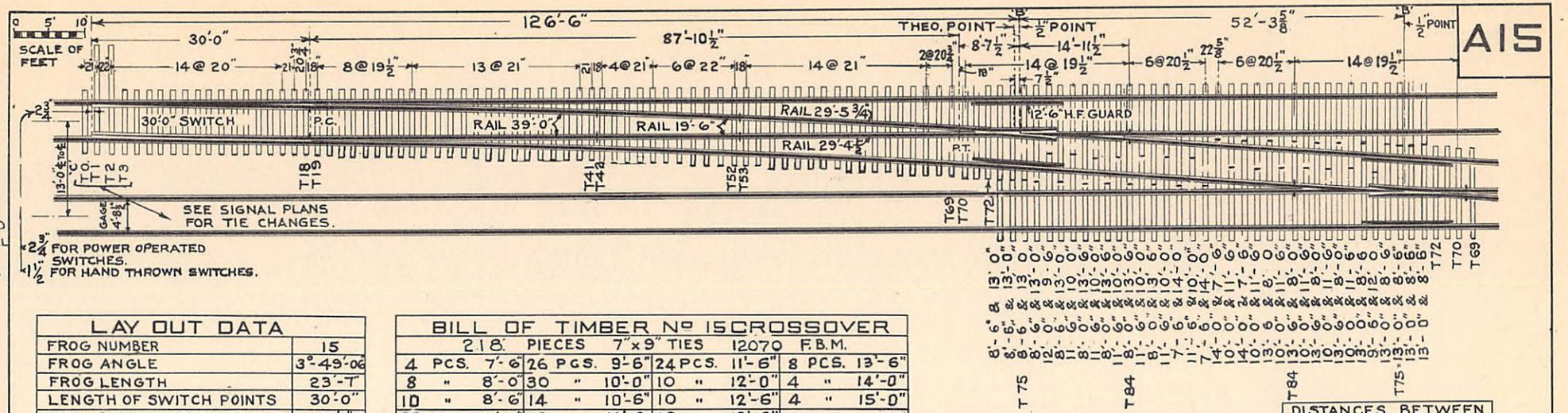
S. T. Phillips
CHIEF ENGINEER

PLAN	
DRAWN BY P.L.D.	
CHECKED BY T.P.P.	
CORRECT J.J.R.	
ISSUE	DATE
A	6-22-29
B	4-6-30
C	2-3-36

B-NOTE ON GUARD RAIL. TIE T.O. BILL

C TIE SPACING. FROG CHANGES GUARD RAIL DISTANCE. 6 TIE STEPS

A15

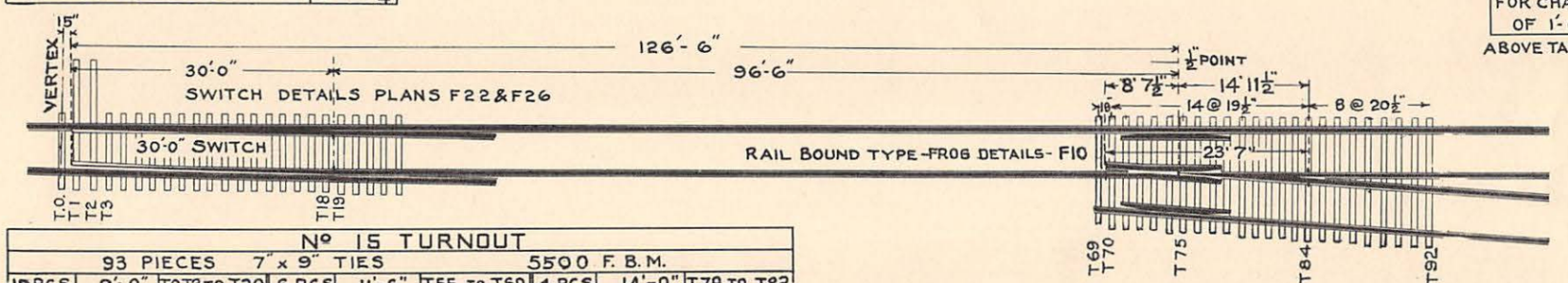


LAY OUT DATA	
FROG NUMBER	15
FROG ANGLE	3°-49'-06"
FROG LENGTH	23'-7"
LENGTH OF SWITCH POINTS	30'-0"
HEEL SPREAD OF SWITCH	6¼"
SWITCH ANGLE	0°-57'-18"
LEAD TO ½" POINT	126'-6"
RADIUS OF CURVE ℄	1764.57
DEGREE OF CURVE	3°-14'-50"
CENTRAL ANGLE OF CURVE	2°-51'-48"
STRAIGHT CLOSURE	87'-10½"
CURVED CLOSURE	87'-11¼"

BILL OF TIMBER Nº 15 CROSSOVER							
218 PIECES 7"x9" TIES				12070 F.B.M.			
4 PCS.	7'-6"	26 PCS.	9'-6"	24 PCS.	11'-6"	8 PCS.	13'-6"
8 "	8'-0"	30 "	10'-0"	10 "	12'-0"	4 "	14'-0"
10 "	8'-6"	14 "	10'-6"	10 "	12'-6"	4 "	15'-0"
38 "	9'-0"	12 "	11'-0	16 "	13'-0"		
"							

DISTANCES BETWEEN CROSSOVER FROGS	
TRACK CENTERS	FROM 'B' TO 'B'
12'-0"	37'-3⅝"
13'-0"	52'-3⅝"
14'-0"	67'-3⅝"
FOR CHANGE OF 1'-0"	14'-11¾"

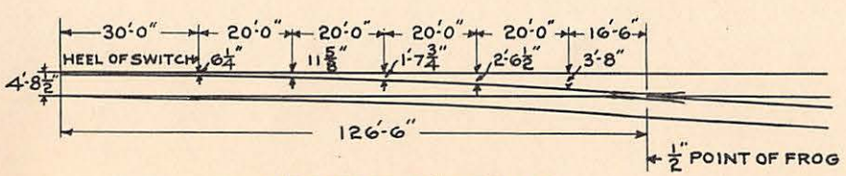
ABOVE TABLE IS FOR TANGENT TRACK



Nº 15 TURNOUT								
93 PIECES 7"x9" TIES						5500 F.B.M.		
19 PCS.	9'-0"	TO T3 TO T20	6 PCS	11'-6"	T55 TO T60	4 PCS.	14'-0"	T79 TO T82
12 "	9'-6"	T21 " T32	4 "	12'-0"	T61 " T64	5 "	14'-6"	T83 " T87
9 "	10'-0"	T33 " T41	5 "	12'-6"	T65 " T69	7 "	15'-0"	T1-2, T88-T92
7 "	10'-6"	T42 " T48	4 "	13'-0"	T70 " T73	"		*
6 "	11'-0"	T49 " T54	5 "	13'-6"	T74 " T78	"		

* 13'-0" WITH 3'-6 CONNECTING ROD.
15'-0" " 5'-6" & 6'-0" " "
WHEN USED WITH SWITCH STAND.

GUARD RAIL
DISTANCE, GAGE LINE OF FROG TO FACE OF GUARD RAIL MUST BE 4'-6⅝" REGARDLESS OF TRACK GAGE.
IF GAGE OF TRACK IS INCREASED, THE FLANGEWAY IS CORRESPONDINGLY INCREASED.



OFFSET DIAGRAM

BOSTON & MAINE R.R.

STANDARD

Nº 15 TURNOUT & CROSSOVER

WITH 30 FT. SWITCH

APPROVED

F. F. Fitzgerald
ENGINEER M. OF W.

A. H. Bachelder
CHIEF ENGINEER

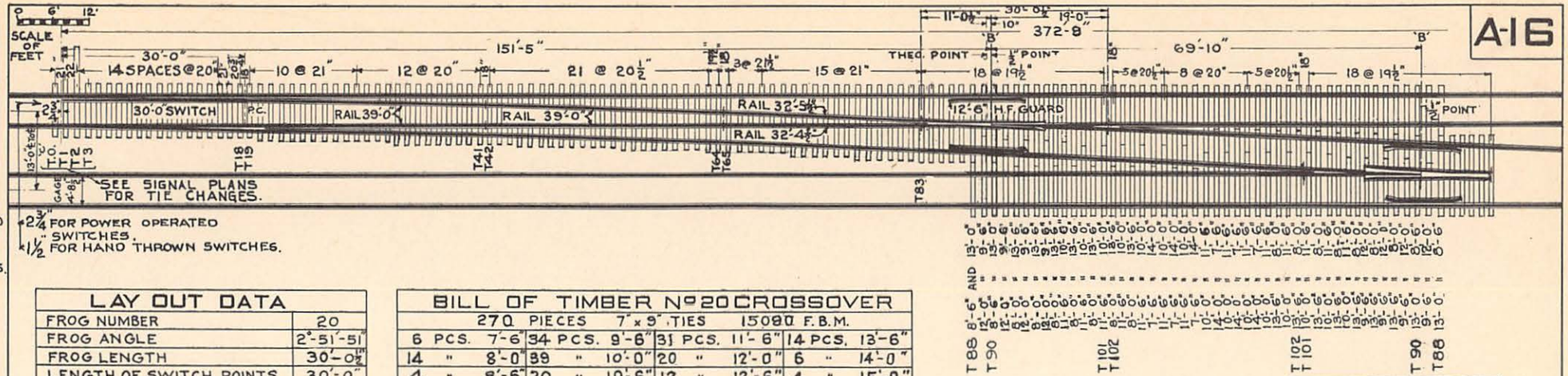
PLAN	
DRAWN BY P.L.D.	
CHECKED BY E.A.H.	
CORRECT J.J.R.	

ISSUE	DATE
A	6-22-29
B	4-6-30
C	2-3-36

B- NOTE ON GUARD RAIL TIE T.O.

C TIE SPACING, FROG CHANGES, GUARD RAIL DISTANCE, 6" TIE STEPS.

A-16



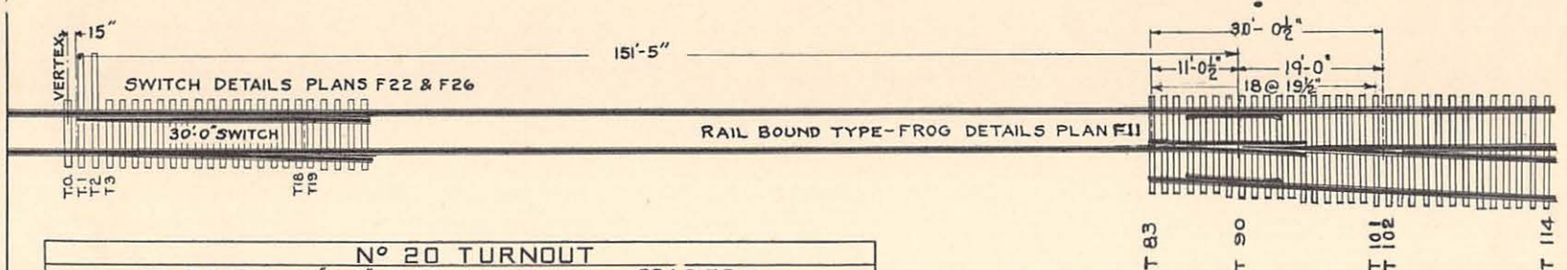
2¾" FOR POWER OPERATED SWITCHES.
1½" FOR HAND THROWN SWITCHES.

LAY OUT DATA	
FROG NUMBER	20
FROG ANGLE	2°-51'-51"
FROG LENGTH	30'-0¾"
LENGTH OF SWITCH POINTS	30'-0"
HEEL SPREAD OF SWITCH	6¼"
SWITCH ANGLE	0°-57'-18"
LEAD TO ½" POINT	151'-5"
RADIUS OF CURVE ℄	3322.13'
DEGREE OF CURVE ℄	1°-43'-29"
CENTRAL ANGLE OF CURVE	1°-54'-33"
STRAIGHT CLOSURE	110'-4½"
CURVED CLOSURE	110'-5½"

BILL OF TIMBER Nº 20 CROSSOVER							
270 PIECES 7" x 9" TIES 15080 F.B.M.							
6 PCS.	7'-6"	34 PCS.	9'-6"	31 PCS.	11'-6"	14 PCS.	13'-6"
14 "	8'-0"	39 "	10'-0"	20 "	12'-0"	6 "	14'-0"
4 "	8'-6"	20 "	10'-6"	12 "	12'-6"	4 "	15'-0"
36 "	9'-0"	16 "	11'-0"	14 "	13'-0"		

DISTANCES BETWEEN CROSSOVER FROGS	
TRACK CENTERS	FROM 'B' TO 'B'
12'-0"	49'-10¼"
13'-0"	69'-10"
14'-0"	89'-9⅞"
FOR CHANGE OF 1'-0"	19'-11⅞"

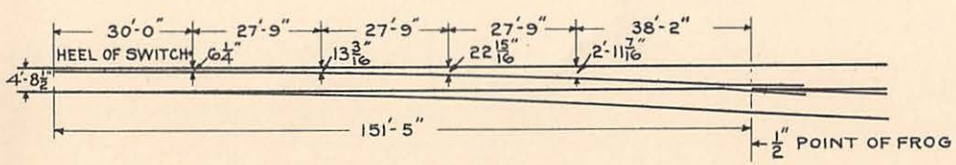
ABOVE TABLE IS FOR TANGENT TRACK



Nº 20 TURNOUT								
115 PIECES 7" x 9" TIES 6910 F.B.M.								
18 PCS.	9'-0"	T.O. T3 TO T19	8 PCS.	11'-0"	T55 TO T62	6 PCS.	13'-0"	T83 TO T88
13 "	9'-6"	T20 " T32	8 "	11'-6"	T63 " T70	6 "	13'-6"	T89 " T94
12 "	10'-0"	T33 " T44	6 "	12'-0"	T71 " T76	6 "	14'-0"	T95 " T100
10 "	10'-6"	T45 " T54	6 "	12'-6"	T77 " T82	8 "	14'-6"	T101 " T108
						8 "	15'-0"	T1-2, 109-114 *

* 13'-0" WITH 3'-6" CONNECTING ROD
15'-0" " 5'-6 & 6'-0" " "
WHEN USED WITH SWITCH STANDS.

GUARD RAIL
DISTANCE, GAGE LINE OF FROG TO FACE OF GUARD RAIL MUST BE 4'-6⅝" REGARDLESS OF TRACK GAGE.
IF GAGE OF TRACK IS INCREASED, THE FLANGEWAY IS CORRESPONDINGLY INCREASED.



OFFSET DIAGRAM

BOSTON & MAINE R.R.

STANDARD

Nº 20 TURNOUT & CROSSOVER

WITH 30 FT. SWITCH

APPROVED

F. F. Fifield
ENGINEER M. OF W.

CHIEF ENGINEER

PLAN	
DRAWN BY: A.S.M.	
CHECKED: E.F.B.	
CORRECT: J.J.R.	
ISSUE	DATE
A	6-10-30
B	2-3-36

B CHANGE IN TIE LENGTHS. 6" TIE STEPS

A17

BILL OF TIMBER Nº 8 CROSSOVER

112 PIECES 12'-0" C-C 7"x9" TIES F.B.M. 6100

4 PCS.	7'-6"	11 PCS.	10'-0"	PCS.	
4 "	8'-0"	13 "	10'-6"	8 "	12'-6"
8 "	8'-6"	6 "	11'-0"	4 "	13'-0"
18 "	9'-0"	6 "	11'-6"	4	15'-0"
14 "	9'-6"	12	12'-0"		

BILL OF TIMBER Nº 8 CROSSOVER

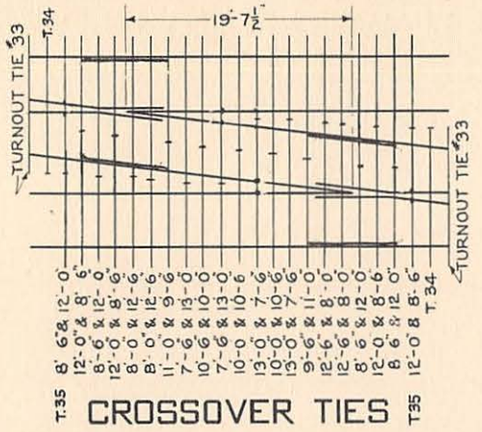
114 PIECES 12'-6" C-C 7"x9" TIES F.B.M. 6290

2 PCS.	7'-6"	11 PCS	10'-0"	8 PCS.	12'-6"
8 "	8'-0"	10 "	10'-6"	8	13'-0"
2 "	8'-6"	7 "	11'-0"	2	13'-6"
20	9'-0"	10 "	11'-6"	4	15'-0"
16	9'-6"	6 "	12'-0"		

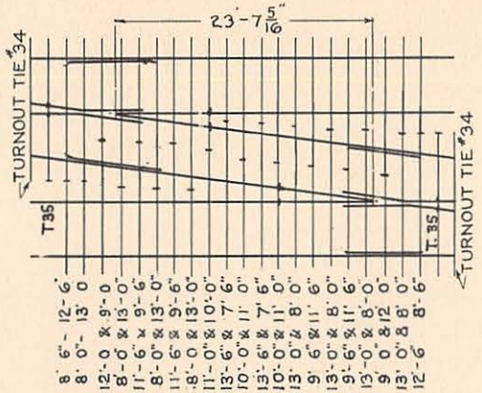
Nº 8 TURNOUT

47 PIECES 7"x9" TIES F.B.M. 2780

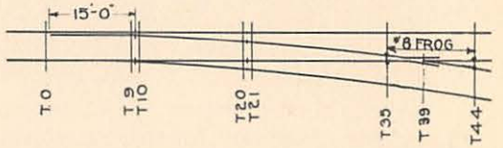
9 PCS	9'-0"	T0,T3 to T10	2 PCS.	11'-0"	T26 to T27	3 PCS.	13'-0"	T36 to T38
6 "	9'-6"	T11 to T16	3 "	11'-6"	T28 - T30	3 "	13'-6"	T39 - T41
4 "	10'-0"	T17 - T20	2 "	12'-0"	T31 - T32	2 "	14'-0"	T42 - T43
5 "	10'-6"	T21 - T25	3 "	12'-6"	T33 - T35	2 "	14'-6	T44 - T45
						3 "	15'-0"	T1&2 - T46



CROSSOVER TIES



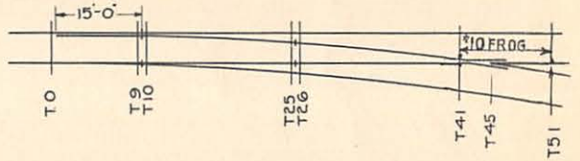
CROSSOVER TIES



Nº 10 TURNOUT

56 PIECES 7"x9" TIES F.B.M. 3370

10 PCS	9'-0"	T0,T3 to T11	4 PCS.	11' 6"	T31 - T34	4 PCS.	14' 0"	T47 - T50
6 "	9'-6"	T12 - T17	3 "	12' 0	T35 T37	3 "	14' 6"	T51 - T53
4 "	10'-0"	T18 - T21	3 "	12' 6	T38 - T40	4 "	15' 0	T1&2 & -
5 "	10'-6"	T22 - T26	3 "	13' 0	T41 - T43			- T54-T55
4	11'-0"	T27 - T30	3 "	13' 6	T44 - T46			



BILL OF TIMBER Nº 10 CROSSOVER

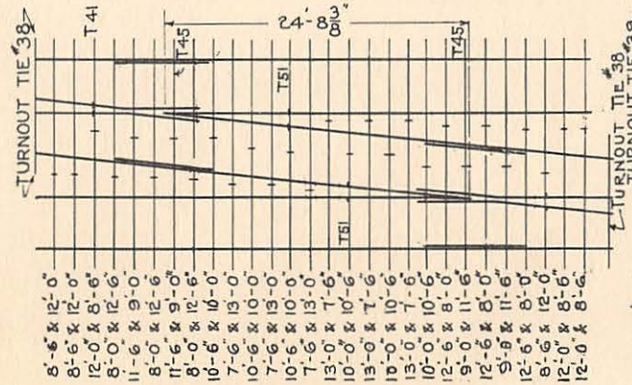
134 PIECES 12'-0" C-C 7"x9" TIES F.B.M. 7300

6 PCS.	7'-6"	14 PCS.	10'-0"	8 PCS.	12'-6"
6 "	8'-0"	16 "	10'-6"	6 "	13'-0"
6 "	8'-6"	8 "	11'-0"	4 "	15'-0"
24 "	9'-0"	12 "	11'-6"	"	
12 "	9'-6"	12 "	12'-0"	"	

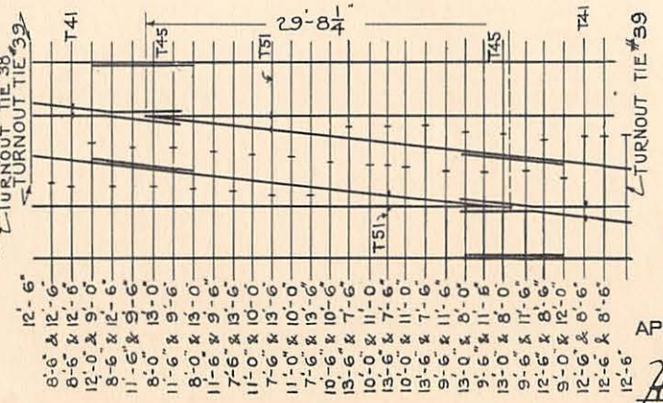
BILL OF TIMBER Nº 10 CROSSOVER

138 PIECES 12'-6" C-C 7"x9" TIES F.B.M. 7650

PIECES	SIZE	PCS.		PCS.	
6 "	7'-6"	12 "	10'-6"	6 "	13'-6"
4 "	8'-0"	12 "	11'-0"	4 "	15'-0"
6 "	8'-6"	14 "	11'-6"		
20 "	9'-0"	8 "	12'-0"		
18 "	9'-6"	12 "	12'-6"		
12 "	10'-0"	4 "	13'-0"		



CROSSOVER TIES



CROSSOVER TIES

BOSTON AND MAINE R. R.

STANDARD TIMBER BILLS

Nº 8 AND Nº 10 TURNOUTS AND CROSSOVERS 12'-0" AND 12'-6" TRACK SPACINGS

APPROVED

H. J. Fiske
ENGINEER M. OF W.

CHIEF ENGINEER

PLAN	
DRAWN BY: A.S.M.	
CHECKED: E.F.B.	
CORRECT: J.J.R.	
ISSUE	DATE
A	6-10-30
B	2-3-36

B- CHANGE IN TIE LENGTHS. 6" TIE STEPS

A 18

BILL OF TIMBER Nº 20 CROSSOVER

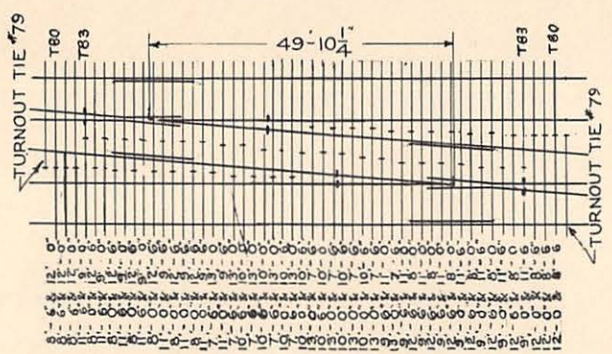
262 PIECES 12'-0" C-C 7"x9" TIES F.B.M. 14200

10 PCS.	7'-6"	31 PCS.	10'-0"	18 PCS.	12'-6"		
12 "	8'-0"	27 "	10'-6"	10 "	13'-0"		
6 "	8'-6"	24 "	11'-0"	4 "	15'-0"		
44 "	9'-0"	24 "	11'-6"				
34 "	9'-6"	18 "	12'-0"				

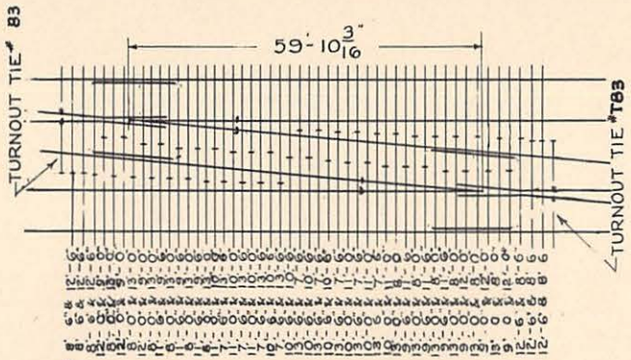
BILL OF TIMBER Nº 20 CROSSOVER

266 PIECES 12'-6" C-C 7"x9" TIES F.B.M. 14640

PIECES	SIZE	PCS.			PCS.		
9	PCS 7'-6"	30	"	10'-0"	18	"	12'-6"
12	" 8'-0"	28	"	10'-6"	14	"	13'-0"
6	" 8'-6"	22	"	11'-0"	9	"	13'-6"
42	" 9'-0"	22	"	11'-6"	4	"	15'-0"
32	" 9'-6"	18	"	12'-0"		"	



CROSSOVER TIES

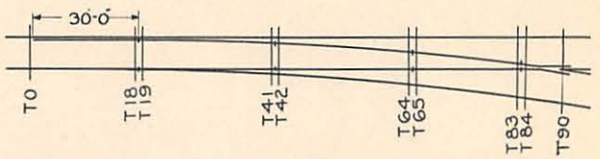


CROSSOVER TIES

Nº 20 TURNOUT

115 PIECES 7"x9" TIES F.B.M. 691.0.

18PCS	9'-0"	TO T3 TO T19	8 PCS	11'-6"	T63-T70	6 PCS	14'-0"	T95-T100
13 "	9'-6"	T20 - T32	6 "	12'-0"	T71-T76	8 "	14'-6"	T101-T108
12 "	10'-0"	T33 - T44	6 "	12'-6"	T77-T82	8 "	15'-0"	T109-T114
10 "	10'-6"	T45 - T54	6 "	13'-0"	T83-T88			T1 & T2
8 "	11'-0"	T55 - T62	6 "	13'-6"	T89-T94			



BILL OF TIMBER Nº 15 CROSSOVER

212 PIECES 12'-0" C-C 7"x9" TIES F.B.M. 11,400

8 PCS.	7'-6"	21 PCS.	10'-0"	12 PCS.	12'-6"		
8 "	8'-0"	17 "	10'-6"	8 "	13'-0"		
6 "	8'-6"	18 "	11'-0"	4 "	15'-0"		
46 "	9'-0"	20 "	11'-6"				
30 "	9'-6"	14 "	12'-0"				

BILL OF TIMBER Nº 15 CROSSOVER

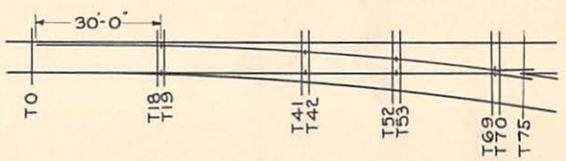
214 PIECES 12'-6" C-C 7"x9" TIES F.B.M. 11700

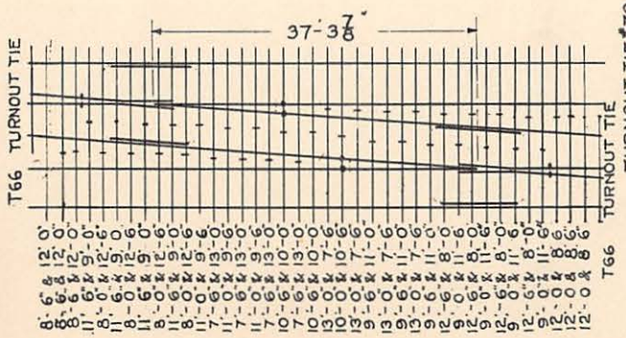
PIECES	SIZE	24 PCS.	10'-0"	PCS.		
9	7'-6"	16	" 10'-6"	7	"	13'-0"
6	8'-0"	18	" 11'-0"	10	"	13'-6"
6	8'-6"	16	" 11'-6"	4	"	15'-0"
42	9'-0"	12	" 12'-0"		"	
28	9'-6"	16	" 12'-6"		"	

Nº 15 TURNOUT

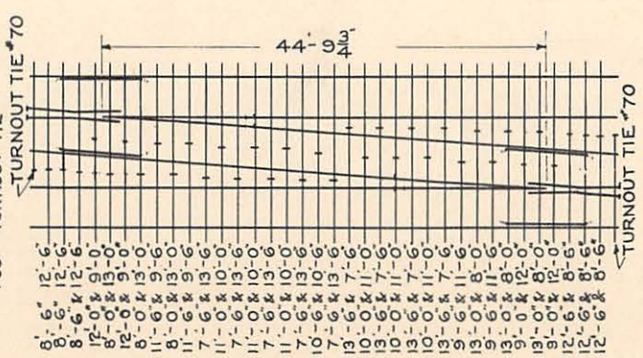
93 PIECES 7"x9" TIES F.B.M. 5500

19PCS	9'-0"	TO T3 TO T20	6 PCS	11'-6"	T55 TO T60	4 PCS	14'-0"	T79 & T82
12 "	9'-6"	T21 TO T32	4 "	12'-0"	T61 & T64	5 "	14'-6"	T83-T87
9 "	10'-0"	T33 - T41	5 "	12'-6"	T65 & T69	7 "	15'-0"	T1-T2, T88-92
7 "	10'-6"	T42 - T48	4 "	13'-0"	T70 & T73			
6	11'-0"	T49 - T54	5 "	13'-6"	T74 & T76			





CROSSOVER TIES



CROSSOVER TIES

BOSTON & MAINE R. R.

STANDARD TIMBER BILLS

Nº 15 AND Nº 20 TURNOUTS AND CROSSOVERS 12'-0" AND 12'-6" TRACK SPACINGS

APPROVED

H. F. Fields
ENGINEER M. OF W.

CHIEF ENGINEER

PLAN	
DRAWN BY: A.S.M.	
CHECKED: E.F.B.	
CORRECT: J.J.R.	
ISSUE	DATE
A	6-10-30
B	2-3-36

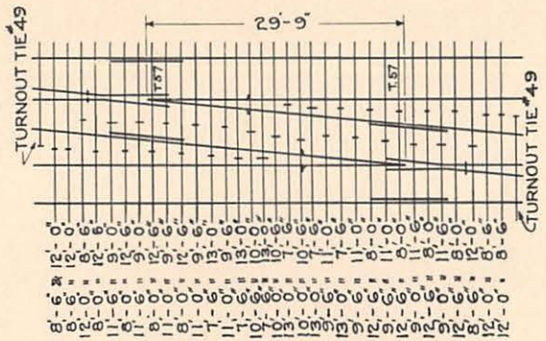
B CHANGE IN TIE LENGTHS. 6' TIE STEPS.

A 19

BILL OF TIMBER Nº 12 CROSSOVER

166 PIECES 12'-0" C-C 7"x9" TIES F.B.M. 8980.

6 PCS.	7'-6"	17 PCS.	10'-0"	10 PCS.	12'-6"
8 "	8'-0"	17 "	10'-6"	6 "	13'-0"
6 "	8'-6"	14 "	11'-0"	4 "	15'-0"
28 "	9'-0"	12 "	11'-6"		
24 "	9'-6"	14 "	12'-0"		

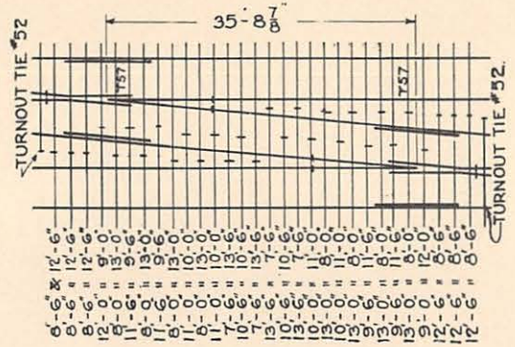


CROSSOVER TIES

BILL OF TIMBER Nº 12 CROSSOVER

166 PIECES 12'-6" C-C 7"x9" TIES F.B.M. 9130

4 PCS.	7'-6"	18 PCS.	10'-0"	14 PCS.	12'-6"
8 "	8'-0"	18 "	10'-6"	8 "	13'-0"
6 "	8'-6"	12 "	11'-0"	4 "	13'-6"
26 "	9'-0"	12 "	11'-6"	4 "	15'-0"
22 "	9'-6"	10 "	12'-0"		



CROSSOVER TIES

Nº 12 TURNOUT

69 PIECES 7"x9" TIES 4070 F.B.M.

12 PCS	9'-0"	T0 T3 to T13	4 PCS.	11'-6"	T41 & T44	3 PCS	14'-0"	T61 to T63
9 "	9'-6"	T14 " T22	4 "	12'-0"	T45 " T48	3 "	14'-6"	T64 " T66
7 "	10'-0"	T23 " T29	4 "	12'-6"	T49 " T52	4 "	15'-0"	T1 & 2-T67 & 68
7 "	10'-6"	T30 " T36	4 "	13'-0"	T53 " T56			
4 "	11'-0"	T37 " T40	4 "	13'-6"	T57 " T60			

NOTE

THIS Nº 12 TURNOUT AND CROSSOVER LAYOUT TO BE USED ONLY WHEN AUTHORIZED BY THE ENGINEER M. OF W.

BOSTON AND MAINE R. R.

TIMBER BILLS

Nº 12 TURNOUT AND CROSSOVER 12'-0" AND 12'-6" TRACK SPACINGS

APPROVED

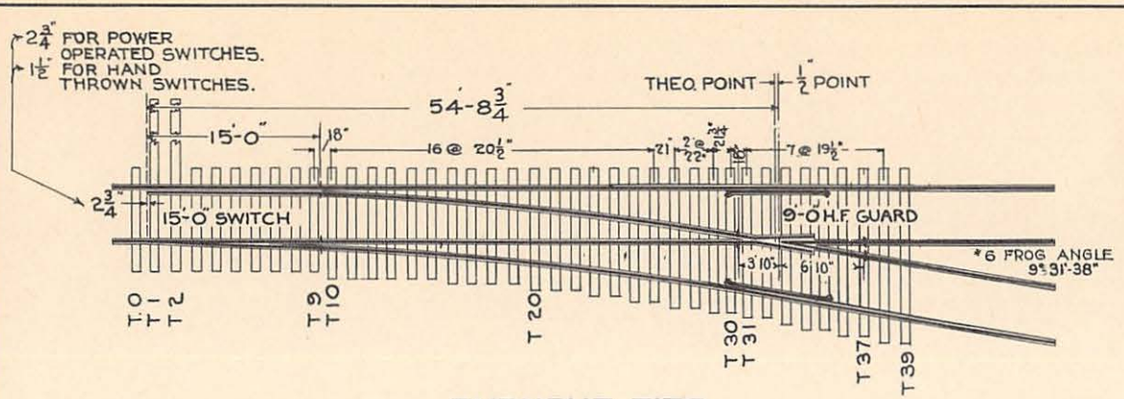
H. F. Fifield
ENGINEER M. OF W.

W. Backus
CHIEF ENGINEER

PLAN	
DRAWN BY: A.S.M.	
CHECKED: E.R.M.	
CORRECT: J.J.R.	
ISSUE	DATE
A	1-26-31
B	2-3-36

B CHANGE IN TIE LENGTHS. 6" TIE STEPS

A 21



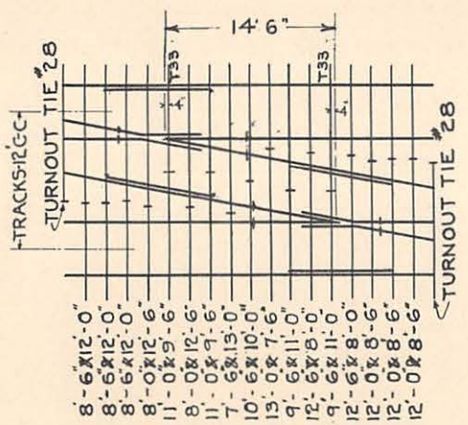
TURNOUT TIES

Nº 6 TURNOUT								
40 PIECES 7"x9" TIES F.B.M. 2370								
8 PCS.	9'-0"	T 0, T 3 to T 9	2 PC.	11'-6	T 25-26	2 PCS.	14'-0"	T 34-35
6 "	9'-6	T 10 - 15	2 "	12'-0"	T 27 28	2 "	14'-6"	T 36-37
4 "	10'-0	T 16 19	2 "	12'-6"	T 29 30	4 "	15'-0"	T 1-2, 38-39
3 "	10'-6"	T 20 22	2 "	13'-0"	T 31 32			
2 "	11'-0"	T 23 24	1 "	13'-6"	T 33			

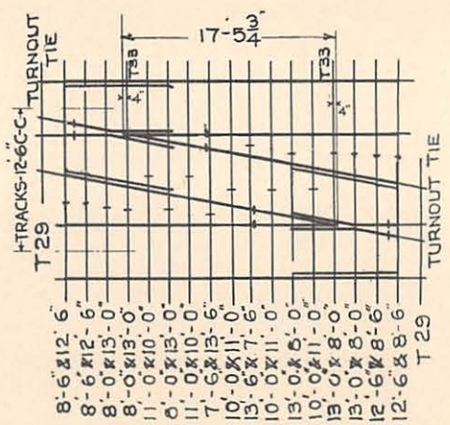
BILL OF TIMBER Nº 6 CROSSOVER					
92 PIECES 12'-0" C-C 7"x9" TIES F.B.M. 4970					
2 PCS.	7'-6"	9 PCS.	10'-0"	4 PCS.	12'-6"
4 "	8'-0"	7 "	10'-6"	2 "	13'-0"
6 "	8'-6"	8 "	11'-0"	4 "	15'-0"
16 "	9'-0"	4 "	11'-6"		
16 "	9'-6"	10 "	12'-0"		

BILL OF TIMBER Nº 6 CROSSOVER					
94 PIECES 12'-6" C-C 7"x9" TIES F.B.M. 5160					
2 PCS.	7'-6"	6 PCS.	10'-6"	2 PCS.	13'-6"
6 "	8'-0"	9 "	11'-0"	4 "	15'-0"
4 "	8'-6"	4 "	11'-6"		
16 "	9'-0"	4 "	12'-0"		
12 "	9'-6"	6 "	12'-6"		
13 "	10'-0"	6 "	13'-0"		

BILL OF TIMBER Nº 6 CROSSOVER					
96 PIECES 13'-0" C-C 7"x9" TIES F.B.M. 5320					
2 PCS.	7'-6"	10 PCS.	10'-0"	4 PCS.	12'-6"
4 "	8'-0"	7 "	10'-6"	6 "	13'-0"
6 "	8'-6"	5 "	11'-0"	4 "	13'-6"
16 "	9'-0"	6 "	11'-6"	2 "	14'-0"
14 "	9'-6"	6 "	12'-0"	4 "	15'-0"



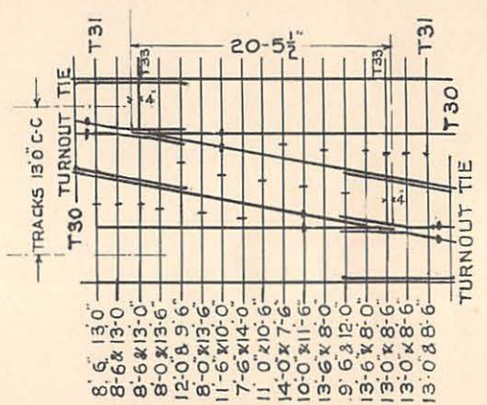
CROSSOVER TIES



CROSSOVER TIES

NOTE

THIS Nº 6 TURNOUT AND CROSSOVER LAYOUT TO BE USED ONLY WHEN AUTHORIZED BY THE ENGINEER M. OF W.



CROSSOVER TIES

BOSTON AND MAINE R. R.

TIMBER BILLS

Nº 6 TURNOUT AND CROSSOVER 12'-0", 12'-6" AND 13'-0" TRACK SPACINGS

APPROVED

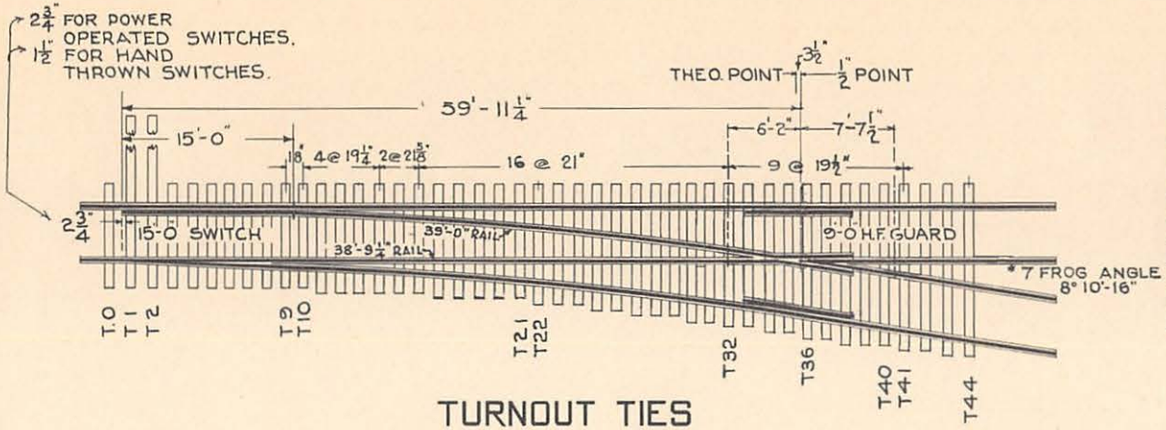
A.F. Fifield
ENGINEER M. OF W.

M Bachelder
CHIEF ENGINEER

PLAN	
DRAWN BY: A.S.M.	
CHECKED: E.F.B.	
CORRECT: J.J.R.	
ISSUE	DATE
A	1-26-31
B	2-3-36

B TIE CHANGES FROG # 6" TIE STEPS

A 22



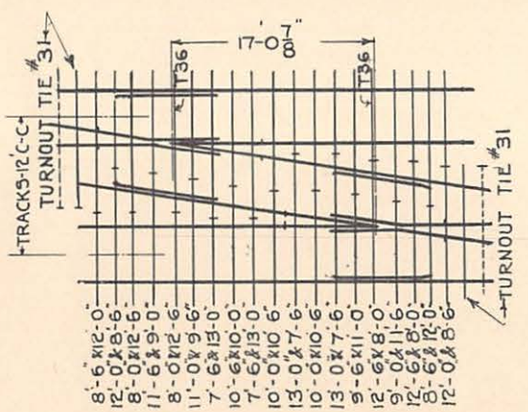
TURNOUT TIES

Nº 7 TURNOUT							
45 PIECES		7"x9" TIES		F.B.M. 2720			
9 PCS	9'-0"	T0,T3 TO T10	3 PCS	11'-6"	T27-T29	3 PCS	14'-0" T38-T40
6 "	9'-6"	T11 " T16	2 "	12'-0"	T30-T31	2 "	14'-6" T41-T42
5 "	10'-0"	T17 " T21	2	12'-6"	T32-T33	4 "	15'-0" T1 & T2
3	10'-6"	T22 " T24	2	13'-0"	T34-T35		T43-T44
2	11'-0"	T25 " T26	2	13'-6"	T36-T37		

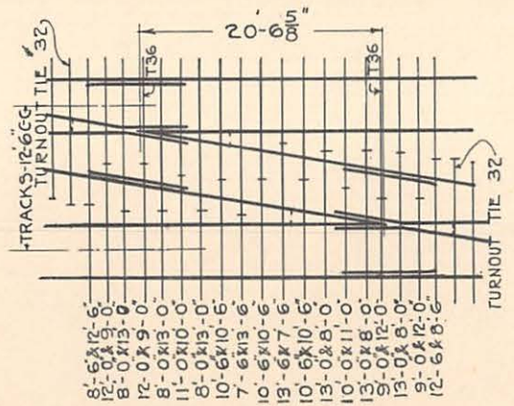
BILL OF TIMBER Nº 7 CROSSOVER					
102 PIECES 12'-0" C-C 7"x9" TIES F.B.M. 5510					
4 PCS.	7'-6"	13 PCS.	10'-0"	4 PCS.	12'-6"
4 "	8'-0"	9 "	10'-6"	4 "	13'-0"
4 "	8'-6"	6 "	11'-0"	4 "	15'-0"
20 "	9'-0"	8 "	11'-6"		
14 "	9'-6"	8 "	12'-0"		

BILL OF TIMBER Nº 7 CROSSOVER					
104 PIECES 12'-6" C-C 7"x9" TIES F.B.M. 5690					
2 PCS.	7'-6"	12 PCS.	10'-0"	4 PCS.	12'-6"
6 "	8'-0"	12 "	10'-6"	6 "	13'-0"
2 "	8'-6"	6 "	11'-0"	2 "	13'-6"
22 "	9'-0"	6 "	11'-6"	4 "	15'-0"
12 "	9'-6"	8 "	12'-0"		

BILL OF TIMBER Nº 7 CROSSOVER					
104 PIECES 13'-0" C-C 7"x9" TIES F.B.M. 5780					
2 PCS.	7'-6"	17 PCS.	10'-0"	4 PCS.	12'-6"
4 "	8'-0"	6 "	10'-6"	6 "	13'-0"
4 "	8'-6"	4 "	11'-0"	4 "	13'-6"
18 "	9'-0"	13 "	11'-6"	2 "	14'-0"
12 "	9'-6"	4 "	12'-0"	4 "	15'-0"



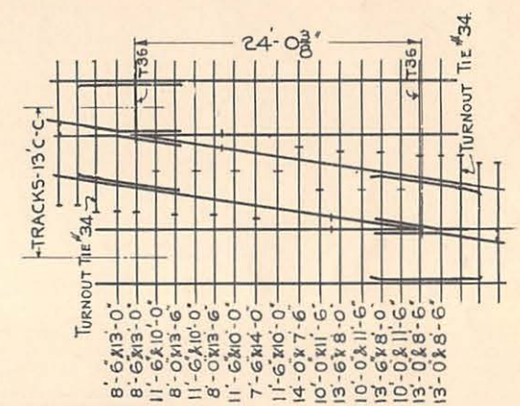
CROSSOVER TIES



CROSSOVER TIES

NOTE

THIS Nº 7 TURNOUT AND CROSSOVER LAYOUT TO BE USED ONLY WHEN AUTHORIZED BY THE ENGINEER M. OF W.



CROSSOVER TIES

BOSTON AND MAINE R. R.

TIMBER BILLS

Nº 7 TURNOUT AND CROSSOVER 12'-0", 12'-6" AND 13'-0" TRACK SPACINGS

APPROVED

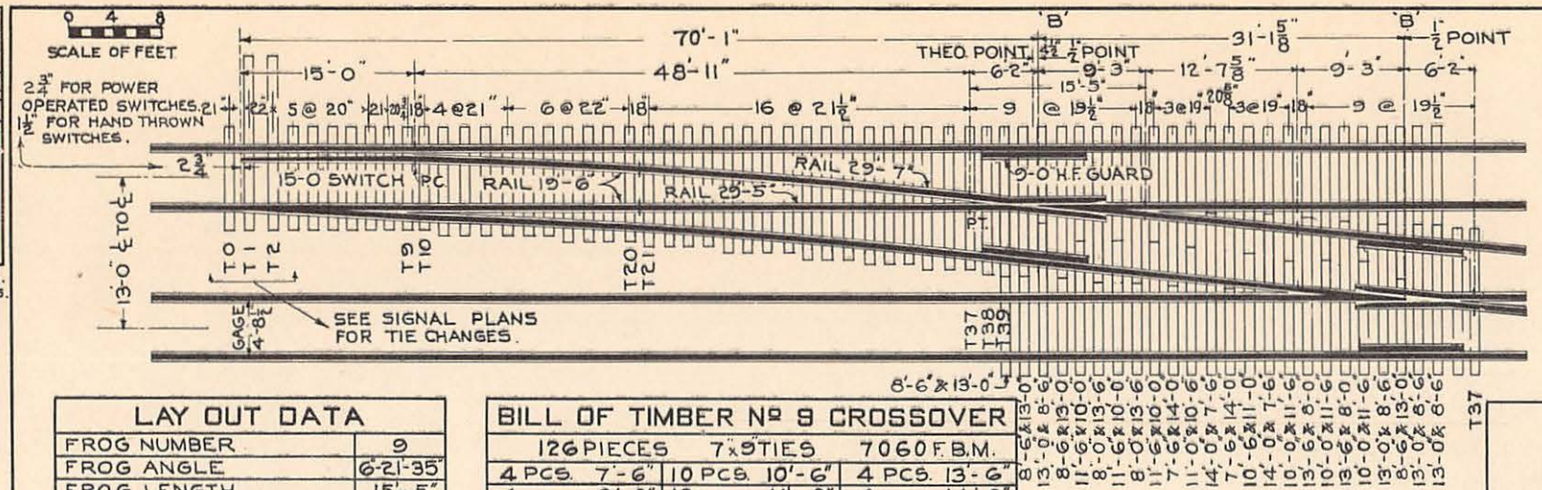
E. F. Fifield
ENGINEER M. OF W.

W. Backes
CHIEF ENGINEER

PLAN	
DRAWN BY: A.S.M.	
CHECKED: E.M.H.	
CORRECT: J. J.R.	
ISSUE	DATE
A	1-26-31
B	2-3-36

B TIE SPACING. FROG CHANGES. GUARD RAIL DISTANCE. 6" TIE STEPS

A23



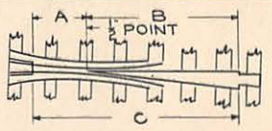
DISTANCES BETWEEN CROSSOVER FROGS	
TRACK CENTERS	FROM 'B' TO 'B'
12'-0"	22'-2"
13'-0"	31'-1 5/8"
14'-0"	40'-1¼"
FOR CHANGE OF 1'-0"	8'-11 5/8"

LAY OUT DATA	
FROG NUMBER	9
FROG ANGLE	6°-21'-35"
FROG LENGTH	15'-5"
LENGTH OF SWITCH POINTS	15'-0"
HEEL SPREAD OF SWITCH	6¼"
SWITCH ANGLE	1°-54'-33"
LEAD TO ½" POINT	70'-1"
RADIUS OF CURVE ℄	629.29'
DEGREE OF CURVE	9°-07'
CENTRAL ANGLE OF CURVE	4°-26'-58"
STRAIGHT CLOSURE	48' 11"
CURVED CLOSURE	49' 1"

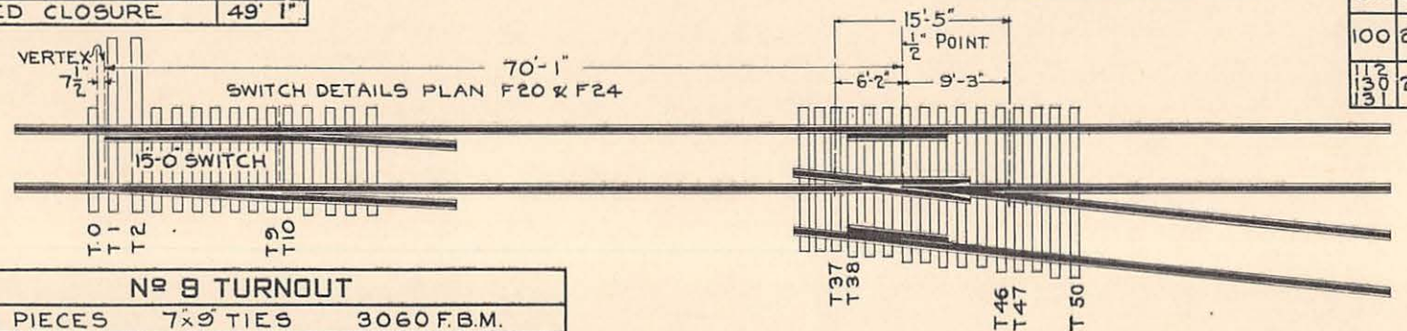
BILL OF TIMBER Nº 9 CROSSOVER					
126 PIECES		7"x9" TIES		7060 F.B.M.	
4 PCS.	7'-6"	10 PCS.	10'-6"	4 PCS.	13'-6"
4 "	8'-0"	10 "	11'-0"	4 "	14'-0"
8 "	8'-6"	12 "	11'-6"	4 "	15'-0"
18 "	9'-0"	6 "	12'-0"		
12 "	9'-6"	6 "	12'-6"		
14 "	10'-0"	10 "	13'-0"		

NOTE

THIS Nº 9 TURNOUT AND CROSSOVER LAYOUT TO BE USED ONLY WHEN AUTHORIZED BY THE ENGINEER M. OF W.

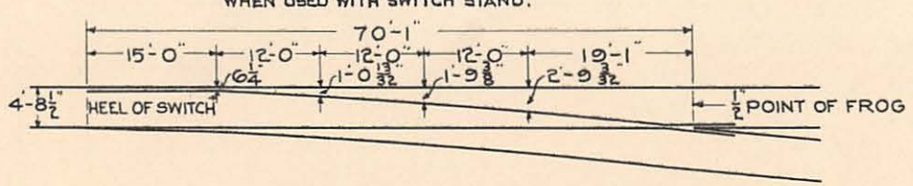


SOLID MANG. FLANGE FROG WHEN USED IN TURNOUT					
WT. RAIL	A	B	C	CLOSURE RAILS STRAIGHT	CLOSURE RAILS CURVED
85	2'-6"	5'-7"	8'-1"	19'-6" 33'-1"	19'-6" 33'-3"
100	2'-7"	5'-10"	8'-5"	19'-6" 33'-0"	19'-6" 33'-2"
112 130 131	2'-11"	6'-10"	9'-9"	19'-6" 32'-8"	19'-6" 32'-10"



Nº 9 TURNOUT								
51 PIECES		7"x9" TIES		3060 F.B.M.				
9 PCS	9'-0"	T0, T3 to T10	3 PCS	12'-6	T35 to T37			
6 "	9'-6	T11 to T16	3 "	13'-0	T38 " T40			
4 "	10'-0"	T17 " T20	2 "	13'-6"	T41 & T42			
4 "	10'-6"	T21 " T24	3 "	14'-0"	T43 to T45			
4 "	11'-0"	T25 " T28	3 "	14'-6"	T46 " T48			
3 "	11'-6"	T29 " 31	4 "	15'-0"	T1 & T2, T49 & 50			
3 "	12'-0"	T32 " T34			*			

* 13'0" WITH 3'6" CONNECTING ROD
15'0" " 5'6" & 6'0" " "
WHEN USED WITH SWITCH STAND.



OFFSET DIAGRAM

GUARD RAIL

DISTANCE, GAGE LINE OF FROG TO FACE OF GUARD RAIL MUST BE 4'-6 5/8" REGARDLESS OF TRACK GAGE.
IF GAGE OF TRACK IS INCREASED, THE FLANGEWAY IS CORRESPONDINGLY INCREASED.

BOSTON AND MAINE R. R.

Nº 9 TURNOUT & CROSSOVER WITH 15 FT. SWITCH

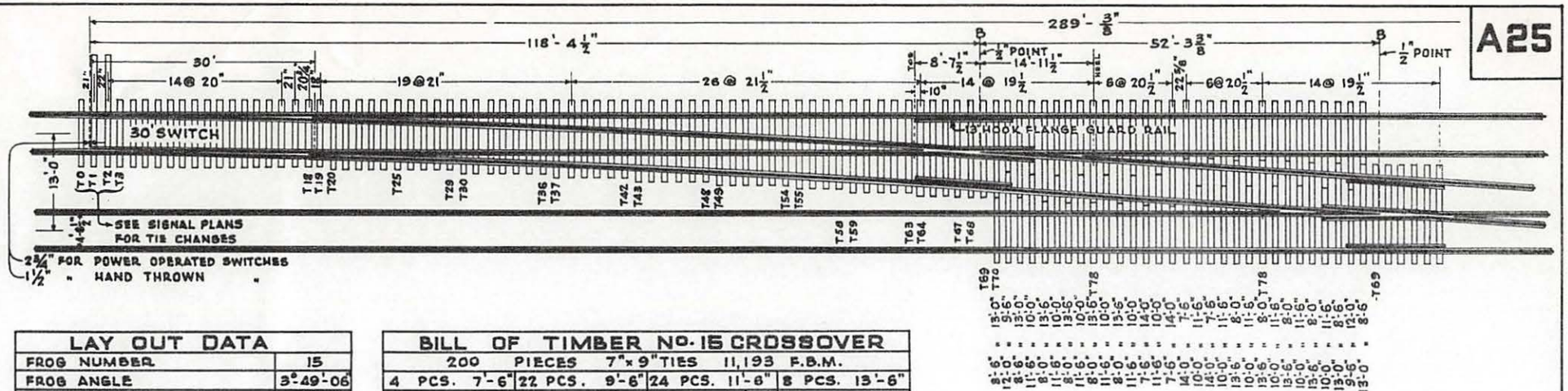
APPROVED

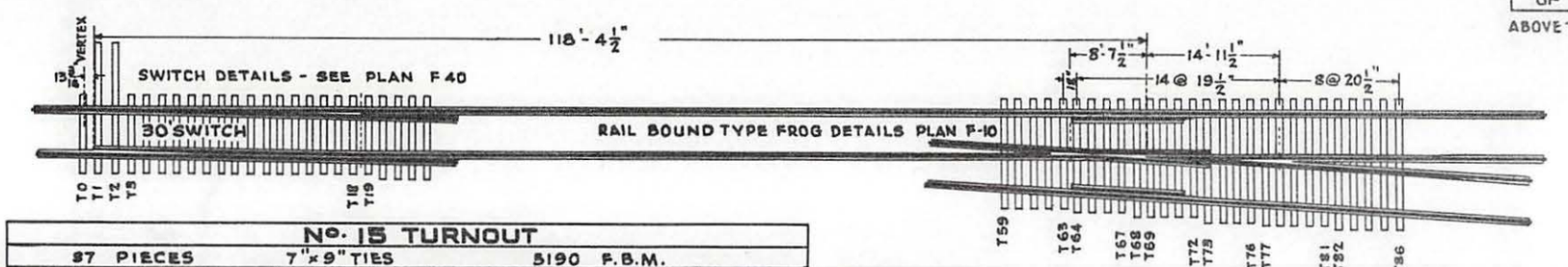
H. F. Ilgenfritz
ENGINEER M. OF W.

W. Backes
CHIEF ENGINEER

PLAN	
DRAWN BY — H.A.R.	
CHECKED BY A.E.T.	
CORRECT F.W.H.	
ISSUE	DATE
A	2-23-51

A25





LAY OUT DATA

FROG NUMBER	15
FROG ANGLE	3°-49'-06"
FROG LENGTH	23'-7"
LENGTH OF SWITCH POINTS	30'-0"
HEEL SPREAD OF SWITCH	6 1/4"
SWITCH ANGLE (HEEL)	1°-24'-22"
" " (POINT	0°-32'-37"
LEAD TO 1/2" POINT	118'-4 1/2"
RADIUS OF SWITCH	1993.19'
CLOSURE RAIL	1879.29'
CENTRAL ANGLE OF CURVE	2°-24'-44"
CURVED CLOSURE	79'-10 1/4"
STRAIGHT CLOSURE	79'-9"

BILL OF TIMBER No. 15 CROSSOVER

200 PIECES 7"x 9" TIES 11,193 F.B.M.

4 PCS.	7'-6"	22 PCS.	9'-6"	24 PCS.	11'-6"	8 PCS.	13'-6"
8 "	8'-0"	26 "	10'-0"	10 "	12'-0"	4 "	14'-0"
4 "	8'-6"	12 "	10'-6"	10 "	12'-6"	4 "	15'-0"
56 "	9'-0"	12 "	11'-0"	16 "	13'-0"		

DISTANCES BETWEEN CROSSING FROGS	
TRACK CENTERS	FROM "B" TO "B"
12'-0"	37'-3 5/8"
13'-0"	52'-3 5/8"
14'-0"	67'-3 1/8"
FOR CHANGE OF 1'-0"	14'-11 3/4"

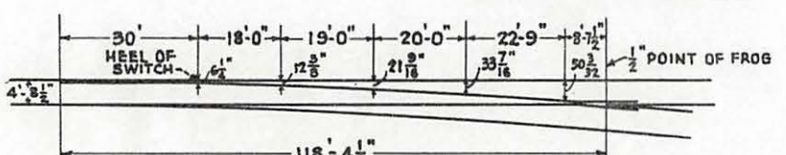
ABOVE TABLE IS FOR TANGENT TRACK

No. 15 TURNOUT

87 PIECES 7"x 9" TIES 5190 F.B.M.

18 PCS.	9'-0"	T0 T3 TO T19	6 PCS.	11'-6"	T49 TO T54	4 PCS.	14'-0"	T73 TO T76
10 "	9'-6"	T20 TO T29	4 "	12'-0"	T55 " T58	5 "	14'-6"	T77 T81
7 "	10'-0"	T30 " T36	5 "	12'-6"	T59 " T63	7 "	15'-0"	T1-2 T82-T86
6 "	10'-6"	T37 " T42	4 "	13'-0"	T64 " T67			*
6 "	11'-0"	T43 " T48	5 "	13'-6"	T68 " T72			

* 13'-0" WITH 3'-6" CONNECTING ROD
15'-0" " 5'-6" & 6'-0" " "
WHEN USED WITH SWITCH STANDS



OFFSET DIAGRAM

GUARD RAIL

DISTANCE OF GAGE LINE OF FROG TO FACE OF GUARD RAIL MUST BE 4'-6 5/8" REGARDLESS OF TRACK GAGE.

IF GAGE OF TRACK IS INCREASED, THE FLANGEWAY IS CORRESPONDINGLY INCREASED.

BOSTON & MAINE R.R.

STANDARD

No. 15 TURNOUT & CROSSOVER

WITH 30 FT CURVED SWITCH

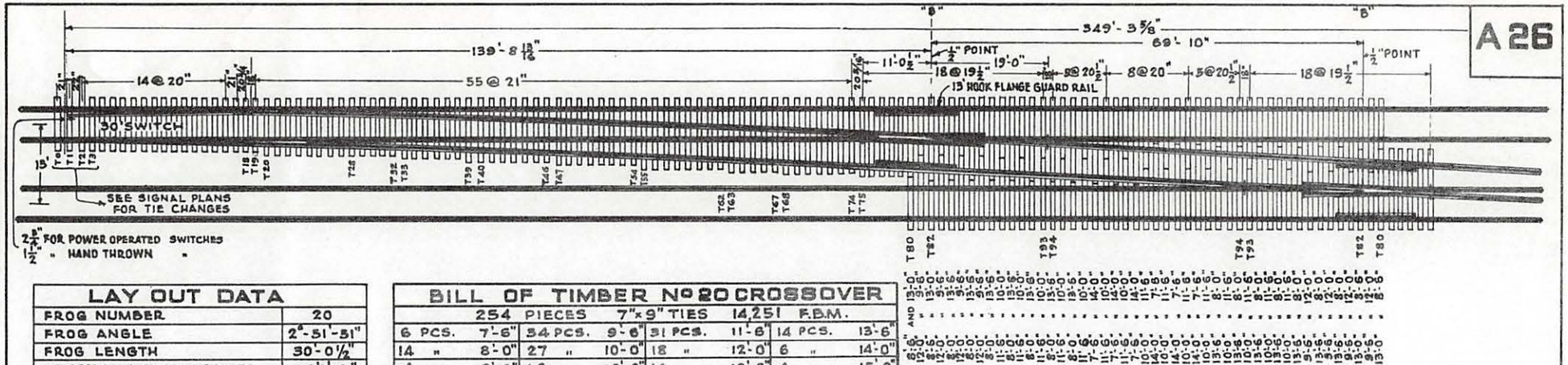
APPROVED:

H. J. Fifield
ENGINEER M. OF W.

S. Phillips
CHIEF ENGINEER

PLAN	
DRAWN BY H.A.R.	
CHECKED BY A.E.T.	
CORRECT F.W.H.	
ISSUE	DATE
A	2-23-51

A 26

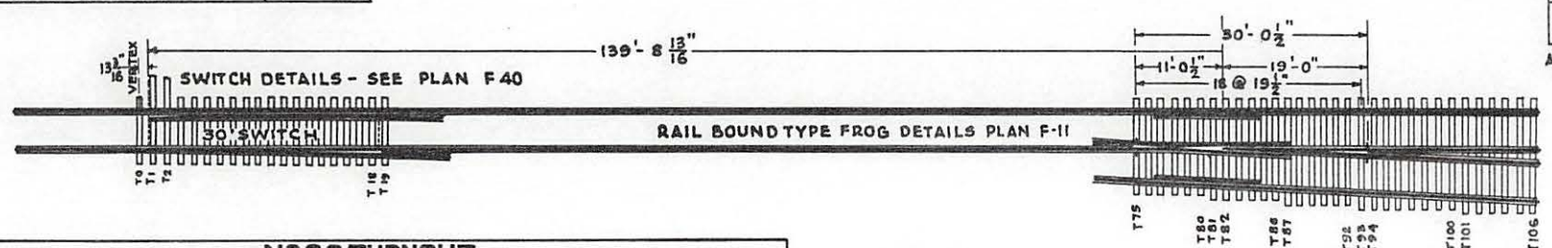


LAY OUT DATA	
FROG NUMBER	20
FROG ANGLE	2°-51'-51"
FROG LENGTH	30'-0 1/2"
LENGTH OF SWITCH POINTS	30'-0"
HEEL SPREAD OF SWITCH	6 1/4"
SWITCH ANGLE -(HEEL)	1°-24'-22"
" " -(POINT)	0°-32'-37"
LEAD TO 1/2" FROG POINT	139'-8 13/16"
RADIUS OF SWITCH	1993.19
CLOSURE RAIL	3889.76'
CENTRAL ANGLE OF CURVE	1°-27'-29"
CURVED CLOSURE	98'-9 5/16"
STRAIGHT CLOSURE	98'-8 5/16"

BILL OF TIMBER No 20 CROSSOVER							
254 PIECES 7"x9" TIES 14,251 F.B.M.							
6 PCS.	7'-6"	34 PCS.	9'-6"	31 PCS.	11'-6"	14 PCS.	13'-6"
14 "	8'-0"	27 "	10'-0"	18 "	12'-0"	6 "	14'-0"
4 "	8'-6"	16 "	10'-6"	14 "	12'-6"	4 "	15'-0"
36 "	9'-0	16 "	11'-0"	14 "	13'-0"		

DISTANCES BETWEEN CROSSOVER FROGS	
TRACK CENTERS	FROM "B" TO "B"
12'-0"	49'-10 1/4"
13'-0	69'-10 "
14'-0	89'-9 7/8"
FOR CHANGE OF 1'-0"	19'-11 7/8"

ABOVE TABLE IS FOR TANGENT TRACK



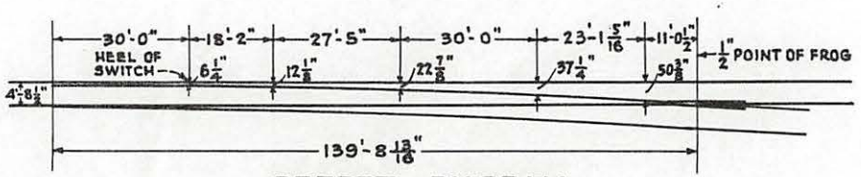
No 20 TURNOUT									
107 PIECES 7"x9" TIES 6489 F.B.M.									
18 PCS.	9'-0"	T0-T3 TO T19	8 PCS.	11'-6"	T55 TO T62	8 PCS.	14'-0"	T87 TO T92
13 "	9'-6"	T20 TO T32	5 "	12'-0"	T63 " T67	8 "	14'-6"	T93 " T100
6 "	10'-0"	T33 " T38	7 "	12'-6"	T68 " T74	8 "	15'-0"	T1-T2 T101 TO T106
8 "	10'-6"	T39 " T46	6 "	13'-0"	T75 " T80			*
8 "	11'-0"	T47 " T54	6 "	13'-6"	T81 " T86			

* 13'-0" WITH 3'-6" CONNECTING ROD
15'-0 " 5'-6" & 6'-0" " "
WHEN USED WITH SWITCH STANDS

GUARD RAIL:

DISTANCE OF GAGE LINE OF FROG TO FACE OF GUARD RAIL MUST BE 4'-6 5/8" REGARDLESS OF TRACK GAGE.

IF GAGE OF TRACK IS INCREASED, THE FLANGEWAY IS CORRESPONDINGLY INCREASED.



OFFSET DIAGRAM

BOSTON & MAINE R.R.

STANDARD

No 20 TURNOUT & CROSSOVER

WITH 30FT CURVED SWITCH

APPROVED:

ENGINEER M. OF W.

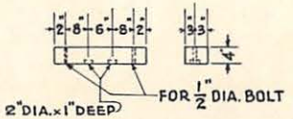
CHIEF ENGINEER

PLAN	
DRAWN	W.C.W. H.A.R.
CHECKED	E.A.A. W.C.W.
CORRECT	J.J.R.

ISSUE	DATE
A	11-1-37
B	3-7-47

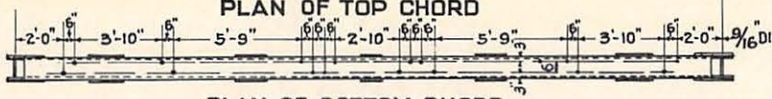
B=Added slot in footings.

B16

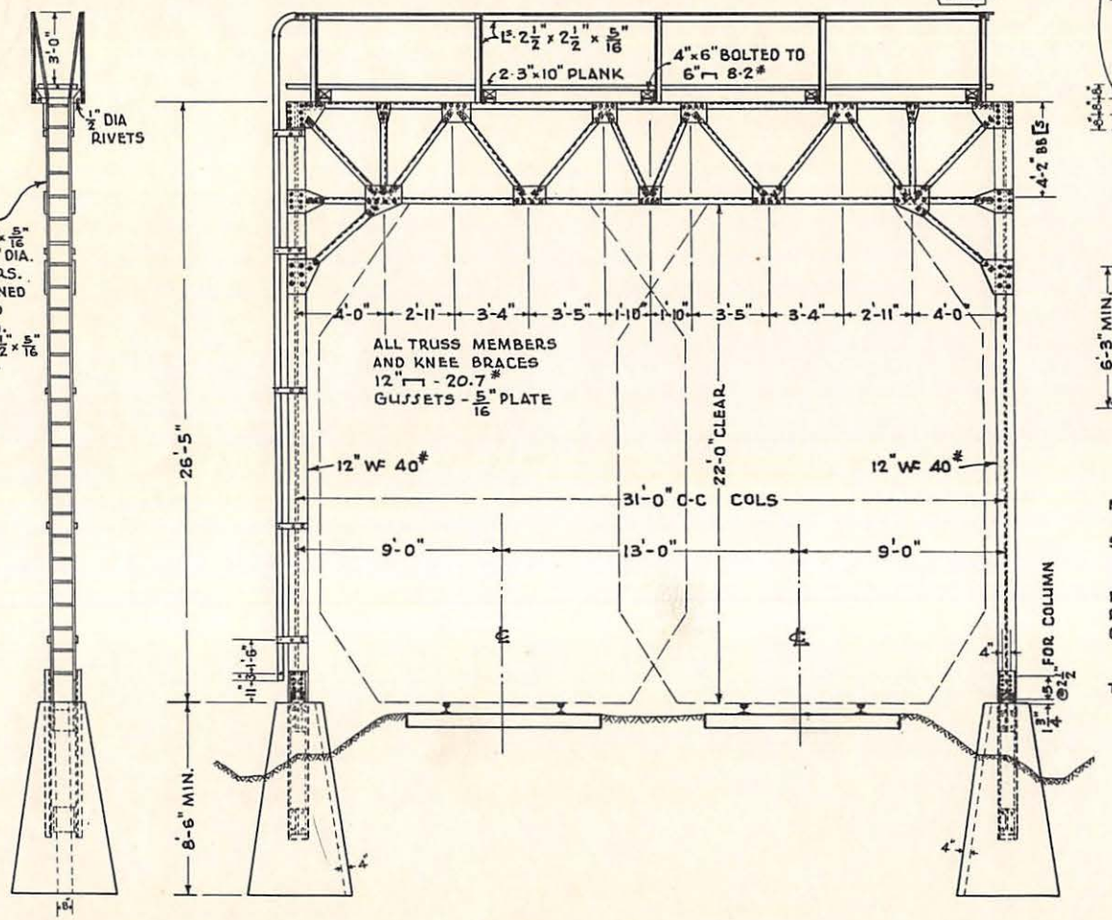


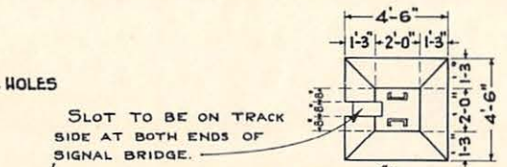
4"x 6" FOR CATWALK

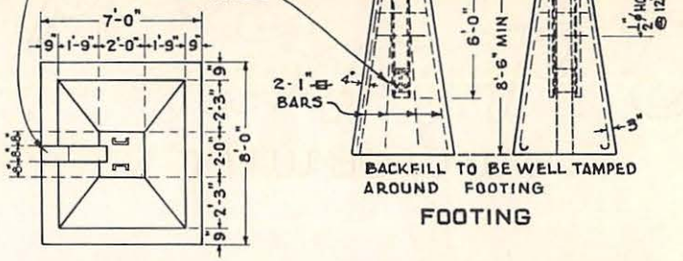
PLAN OF TOP CHORD



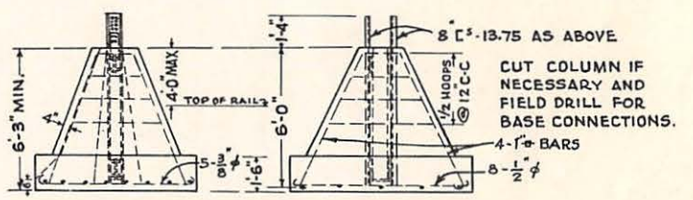
PLAN OF BOTTOM CHORD


1-2 1/2" x 2 1/2" x 5/16"
2-3"x10" PLANK
4"x6" BOLTED TO 6" ⊏ 8.2#
4'-2" BB
4'-0" 2'-11" 3'-4" 3'-5" 1'-10" 1'-10" 3'-5" 3'-4" 2'-11" 4'-0"
ALL TRUSS MEMBERS AND KNEE BRACES 12" ⊏ - 20.7#
GUSSETS - 5/16" PLATE
12" WF 40#
12" WF 40#
22'-0" CLEAR
31'-0" C-C COLS
9'-0"
13'-0"
9'-0"
26'-5"
8'-6" MIN.
FOR COLUMN
3'-0"
1/2" DIA RIVETS
LADDER BARS 2 1/2" x 5/16" RUNGS 3/4" DIA. AT 12" CTRS. ENDS TURNED TO 5/8" AND RIVETTED. BRACES 2 1/2" x 5/16" 6'± CTRS.





FOOTING



SPECIAL FOOTING FOR ROCK BEARING

GENERAL NOTES

MAXIMUM LOADING - 3-2 ARM OR 2-3ARM SIGNALS. IF MORE SIGNALS ARE DESIRED, DESIGN MUST BE CHANGED.
STEEL-TO BE IN ACCORDANCE WITH BOSTON AND MAINE RAILROAD GENERAL SPECIFICATIONS FOR DESIGN, FABRICATION AND ERECTION OF STEEL STRUCTURES - 1936.
PAINT- ONE SHOP COAT OF STANDARD RED LEAD "PRIMING COAT"
RIVETS- 3/4" ⌀ - OPEN HOLES 13/16" ⌀ EXCEPT AS NOTED.
CONCRETE FOOTINGS- TO BE IN ACCORDANCE WITH BOSTON AND MAINE RAILROAD SPECIFICATIONS FOR CONCRETE, PLAIN AND REINFORCED. CONCRETE TO BE OF 3000# CLASS.
TIMBER- TO BE SOUTHERN YELLOW PINE OR DENSE DOUGLAS FIR, TREATED WITH THE ZINC-META-ARSENITE PROCESS.

BOSTON AND MAINE R.R.
STANDARD
SIGNAL BRIDGE
SPANNING TWO TRACKS

APPROVED:

E. N. Fox
ENGINEER OF SIGNALS AND TELEGRAPH

ENGINEER OF STRUCTURES

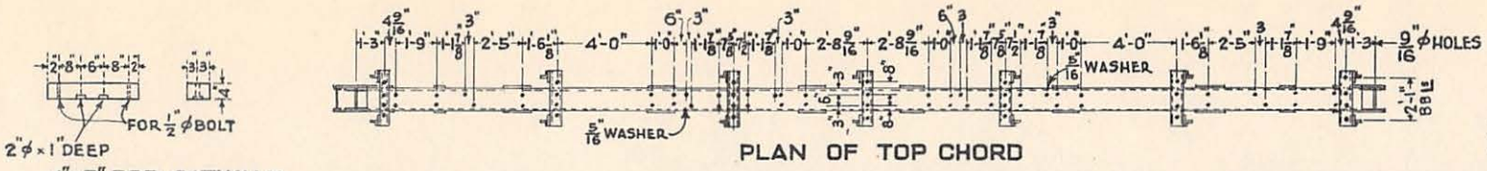
CHIEF ENGINEER

PLAN	
DRAWN	W.C.W. H.A.P.
CHECKED	E.A.A. W.C.W.
CORRECT	J.J.R.

ISSUE	DATE
A	11-1-37
B	3-7-47

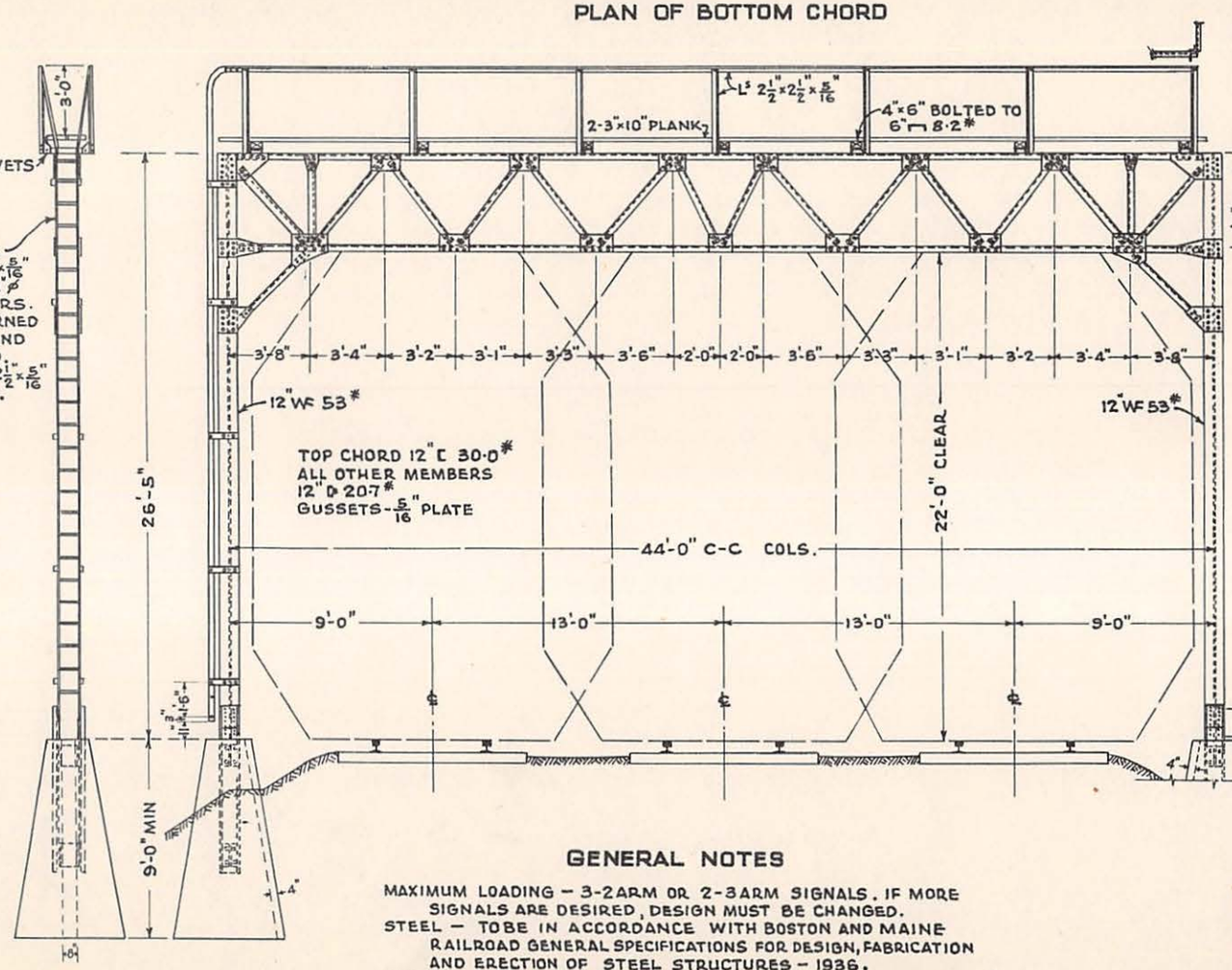
B=Added slot in footings.

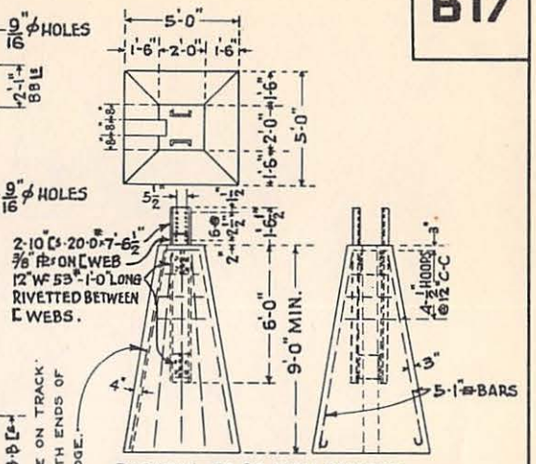
B17



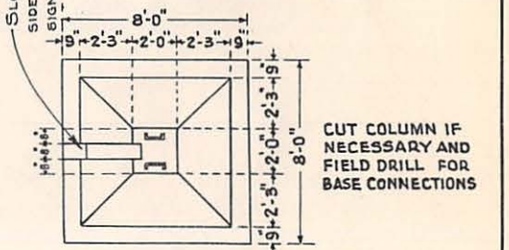
PLAN OF TOP CHORD

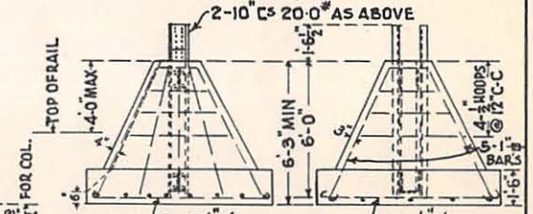
PLAN OF BOTTOM CHORD


1/2" ϕ RIVETS
LADDER BARS 2 1/2" x 5/16" RUNGS 3/4" ϕ AT 12" CTRS. ENDS TURNED TO 5/8" ϕ AND RIVETTED. BRACES 2 1/2" x 5/16" 6'± CTRS.
2-3"x10" PLANK
L's 2 1/2"x2 1/2"x 5/16"
4"x6" BOLTED TO 6" ⌐ 8.2#
12"WF 53#
12"WF 53#
TOP CHORD 12" C 30.0#
ALL OTHER MEMBERS 12" D 20.7#
GUSSETS - 5/16" PLATE
22'-0" CLEAR
26'-5"
9'-0" MIN
44'-0" C-C COLS.
9'-0"
13'-0"
13'-0"
9'-0"
4'-2" B-B C's


2-10" C's 20.0# 7-6 1/2"
3/8" PLS ON C WEB
12"WF 53# - 1'-0" LONG RIVETTED BETWEEN C WEBS.
SLOT TO BE ON TRACK SIDE AT BOTH ENDS OF SIGNAL BRIDGE.
6'-0" MIN.
9'-0" MIN.
4-1" HOOPS @ 12" C-C
5-1" ϕ BARS
BACKFILL TO BE WELL TAMPED AROUND FOOTING.

FOOTING





SPECIAL FOOTING FOR ROCK BEARING

GENERAL NOTES

MAXIMUM LOADING – 3-2ARM OR 2-3ARM SIGNALS. IF MORE SIGNALS ARE DESIRED, DESIGN MUST BE CHANGED.
STEEL – TO BE IN ACCORDANCE WITH BOSTON AND MAINE RAILROAD GENERAL SPECIFICATIONS FOR DESIGN, FABRICATION AND ERECTION OF STEEL STRUCTURES – 1936.
PAINT – ONE SHOP COAT OF STANDARD RED LEAD "PRIMING COAT"
RIVETS – 3/4" ϕ OPEN HOLES 13/16" ϕ EXCEPT AS NOTED.
CONCRETE FOOTINGS – TO BE IN ACCORDANCE WITH BOSTON AND MAINE RAILROAD SPECIFICATIONS FOR CONCRETE, PLAIN AND REINFORCED. CONCRETE TO BE OF 3000# CLASS.
TIMBER – TO BE SOUTHERN YELLOW PINE OR DENSE DOUGLAS FIR TREATED WITH ZINC-META-ARSENITE PROCESS

BOSTON AND MAINE R.R.

STANDARD
SIGNAL BRIDGE
SPANNING THREE TRACKS

APPROVED:

E. M. Fox
ENGINEER OF SIGNALS AND TELEGRAPH

Eric W. Gugler
ENGINEER OF STRUCTURES

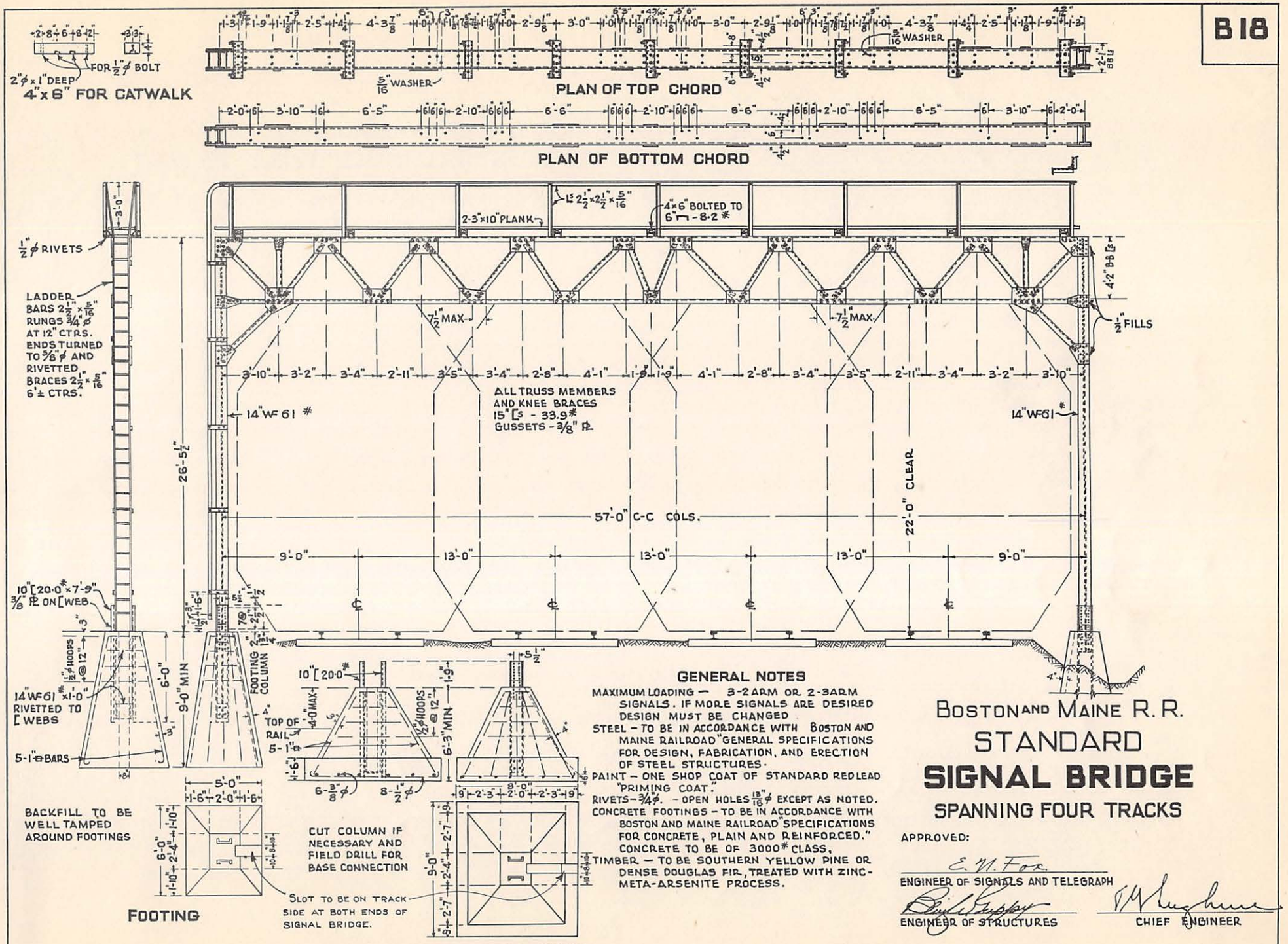
D. J. Loughran
CHIEF ENGINEER

PLAN	
DRAWN	W.C.W.
CHECKED	H.A.R. E.A.A.
CORRECT	W.C.W. J.J.R.

ISSUE	DATE
A	11-1-37
B	3-7-47
C	1-19-48

B=Added slot in footings.
C=Column changed

B18


2"ϕ x 1" DEEP
FOR 1/2" ϕ BOLT
4"x6" FOR CATWALK
5/16" WASHER
PLAN OF TOP CHORD
PLAN OF BOTTOM CHORD
2-3"x10" PLANK
L 2 1/2"x2 1/2"x 5/16"
4"x6" BOLTED TO 6"⊏-8.2#
1/2" ϕ RIVETS
LADDER BARS 2 1/2" x 5/16" RUNGS 3/4" ϕ AT 12" CTRS. ENDS TURNED TO 5/8" ϕ AND RIVETTED BRACES 2 1/2" x 5/16" 6'± CTRS.
7 1/2" MAX.
FILLS
ALL TRUSS MEMBERS AND KNEE BRACES 15"[s - 33.9# GUSSETS - 3/8" PL.
14"WF 61 #
26'-5 1/2"
57'-0" C-C COLS.
22'-0" CLEAR
10"[20.0#x7'-9" 3/8" PL ON [WEB
14"WF61 #x1'-0" RIVETTED TO [WEBS
5-1" ⊟ BARS
1/2" ϕ HOOPS @ 12"
FOOTING COLUMN
TOP OF RAIL
6'-0" MIN
9'-0" MIN
6-3/8" ϕ
8-1/2" ϕ
BACKFILL TO BE WELL TAMPED AROUND FOOTINGS
FOOTING
CUT COLUMN IF NECESSARY AND FIELD DRILL FOR BASE CONNECTION
SLOT TO BE ON TRACK SIDE AT BOTH ENDS OF SIGNAL BRIDGE.
SPECIAL FOOTING FOR ROCK BEARING

GENERAL NOTES

MAXIMUM LOADING — 3-2 ARM OR 2-3 ARM SIGNALS. IF MORE SIGNALS ARE DESIRED DESIGN MUST BE CHANGED

STEEL — TO BE IN ACCORDANCE WITH BOSTON AND MAINE RAILROAD "GENERAL SPECIFICATIONS FOR DESIGN, FABRICATION, AND ERECTION OF STEEL STRUCTURES."

PAINT — ONE SHOP COAT OF STANDARD RED LEAD "PRIMING COAT."

RIVETS — 3/4 ϕ. — OPEN HOLES 13/16" ϕ EXCEPT AS NOTED.

CONCRETE FOOTINGS — TO BE IN ACCORDANCE WITH BOSTON AND MAINE RAILROAD "SPECIFICATIONS FOR CONCRETE, PLAIN AND REINFORCED." CONCRETE TO BE OF 3000# CLASS.

TIMBER — TO BE SOUTHERN YELLOW PINE OR DENSE DOUGLAS FIR, TREATED WITH ZINC-META-ARSENITE PROCESS.

BOSTON AND MAINE R.R.

STANDARD SIGNAL BRIDGE

SPANNING FOUR TRACKS

APPROVED:

E. M. Fox
ENGINEER OF SIGNALS AND TELEGRAPH

ENGINEER OF STRUCTURES

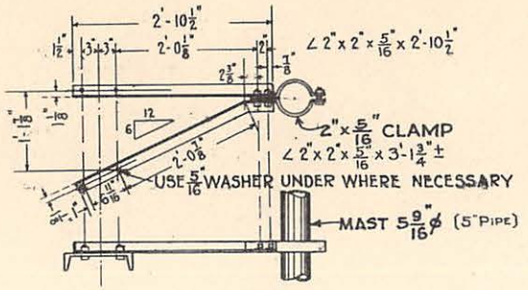
CHIEF ENGINEER

PLAN	
DRAWN	W.C.W. H.A.R.
CHECKED	E.A.A. W.C.W.
CORRECT	J.J.R.

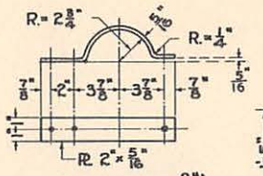
ISSUE	DATE
A	11-1-37
B	3-7-47

B- GENL. REVISION.

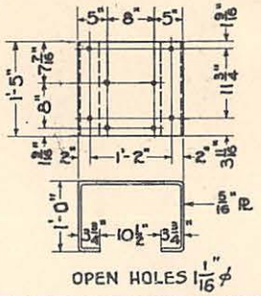
B19 A



BRACE FOR SIGNAL MAST - B1



CLAMP DETAIL



SUPPORT FOR ONE UNIT SIGNAL - S1

MATERIAL FOR ONE PLATFORM*

STEEL

No.	Mark	Shape	Length	Weight	Remarks
1	C1R	12" [20.7#	4'-6"	93. lbs.	As shown.
1	C1L	"	4'-6"	93. lbs.	Opposite hand.
2	C2	7" [9.8#	5'-4"	104. lbs.	As shown.
		∠2"x2"x5/16"	5'-8"	22. lbs.	
1	R1R	"	3'-8 11/16"	14.6 lbs.	As shown.
		"	2'-11 3/16"	11.5 lbs.	
		R 8½"x5/16"	0'-11"	8.2 lbs.	
1	R1L	"		56.3 lbs.	Opposite hand.
1	R2	∠2"x2"x5/16"	5'-8 5/8"	22.4 lbs.	As shown.
			TOTAL WEIGHT	425.0 lbs.	

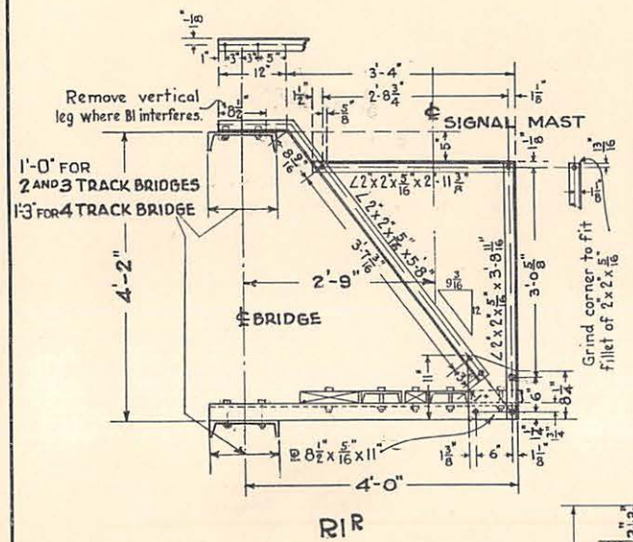
TIMBER

2	W1	2"x10"	5'-4"	
1	W2	2"x4"	5'-4"	

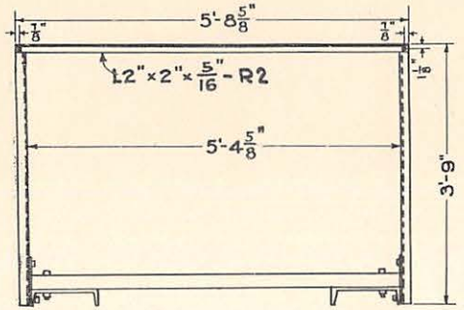
BOLTS

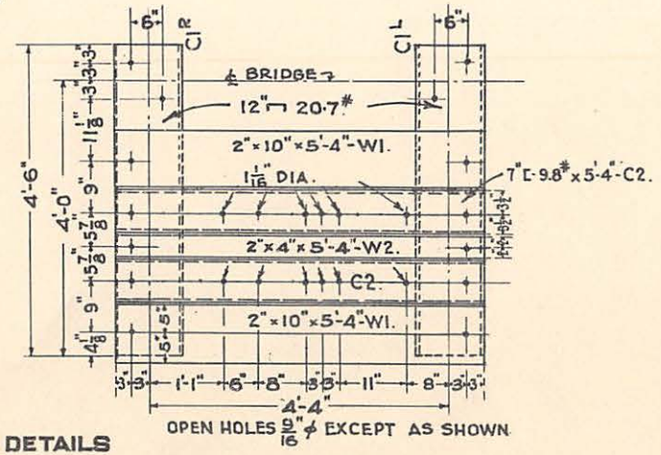
No.	Size	Length	Remarks
4	1"ϕ Mach. Bolt.	0'-4"	Sq. Hd. & Nut.
4	½"ϕ " "	0'-4"	" " "
10	" " "	0'-3"	" " "
10	" " "	0'-2"	" " "

*B1 & S1 NOT INCLUDED.



R1R





PLATFORM DETAILS

GENERAL NOTES

MAXIMUM LOADING — 1-3 UNIT SIGNAL PER PLATFORM.
STEEL — TO BE IN ACCORDANCE WITH BOSTON AND MAINE RAILROAD GENERAL SPECIFICATIONS FOR DESIGN, FABRICATION, AND ERECTION OF STEEL STRUCTURES - 1936.
PAINT — ONE SHOP COAT OF STANDARD RED LEAD "PRIMING COAT".
BOLTS & RIVETS - ½"ϕ OPEN HOLES 9/16"ϕ, EXCEPT AS NOTED.
TIMBER — TO BE SOUTHERN YELLOW PINE, OR DENSE DOUGLAS FIR, TREATED WITH ZINC-META-ARSENITE PROCESS.

BOSTON AND MAINE R.R.

STANDARD
SIGNAL BRIDGE
SUPPORTS FOR SIGNALS

APPROVED:

E. H. Fox
ENGINEER OF SIGNALS AND TELEGRAPH

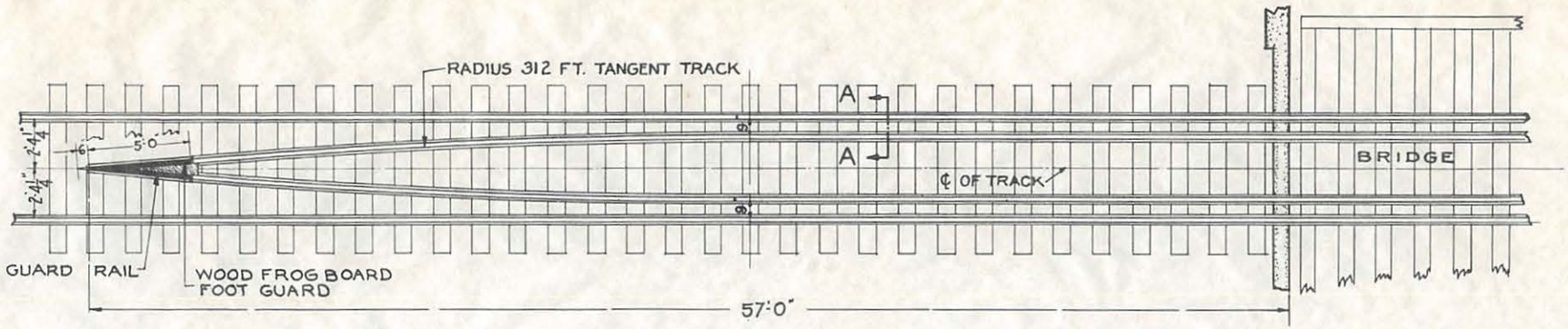
ENGINEER OF STRUCTURES

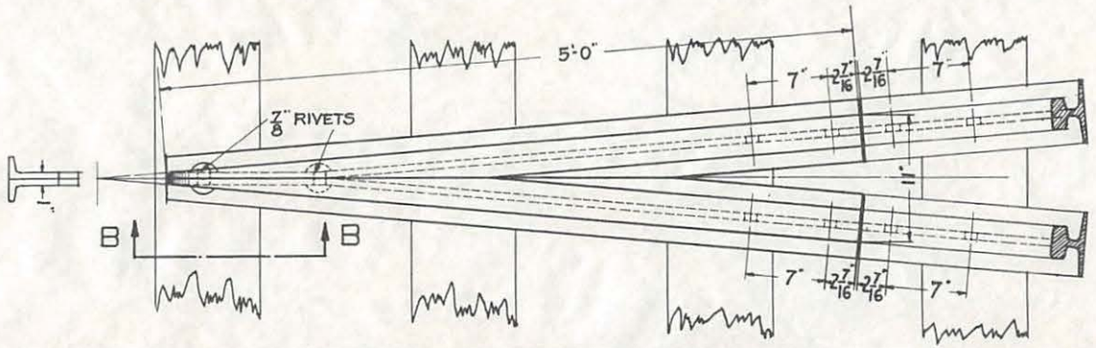
CHIEF ENGINEER

FOR USE WITH PLANS B16, B17, B18.

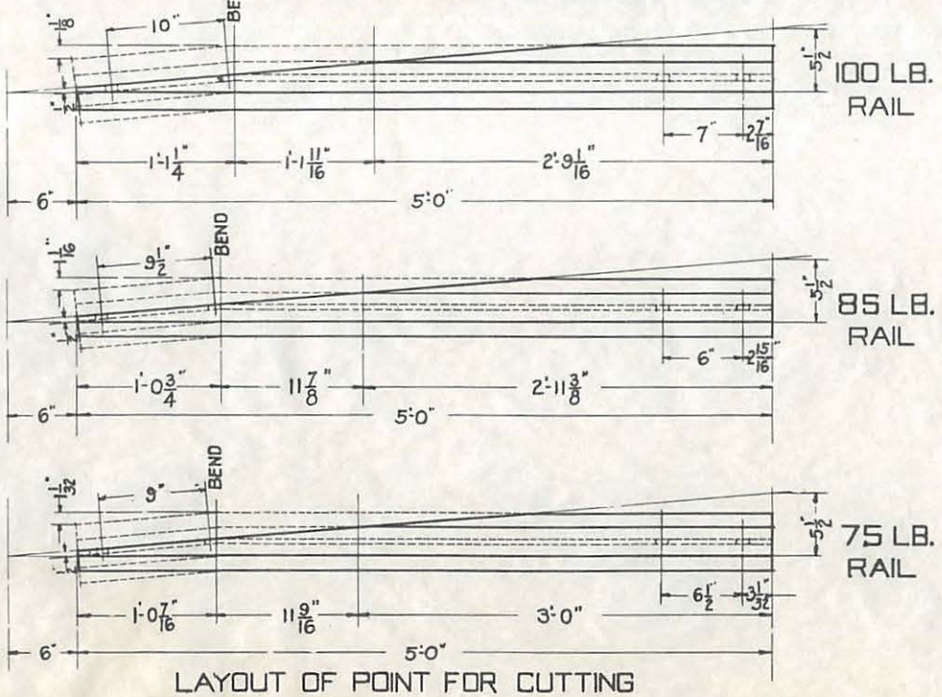
PLAN	
DRAWN BY: E.R.M	
CHECKED: A.S.M.	
CORRECT: J.J.R.	
ISSUE	DATE
A	1-26-31

B 20

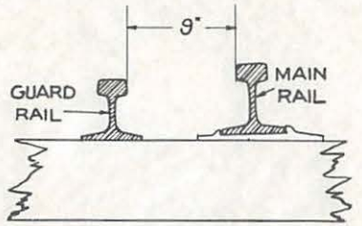




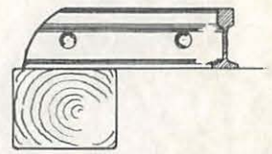
PLAN OF 100 LB. GUARD RAIL



LAYOUT OF POINT FOR CUTTING



SECTION A A



ELEVATION B B

NOTES

TWO GUARD RAILS FOR EACH TRACK, PLACED BETWEEN TRAFFIC RAILS, DRAWN TO A POINT AT EACH END OF BRIDGE AND FULLY SPIKED.
FOR USE ON ALL BRIDGE OPENINGS OF 15' AND OVER, EXCEPTING CONCRETE SLABS OF SINGLE SPAN OF 20' OR UNDER. NO INSIDE GUARD RAIL REQUIRED.
WHEN MAIN RAIL IS 130 LB. GUARD RAIL SHALL BE 100 LB.
" " " " 100 LB. " " " " 85 LB.
" " " " 85 LB. " " " " 75 LB.
POINTS FROM USED NO. 6 RAIL FROGS MAY BE USED ON BRANCH LINES, OR WITH 85 LB. RAIL.

BOSTON AND MAINE R. R.

STANDARD GUARD RAIL FOR BRIDGES

APPROVED

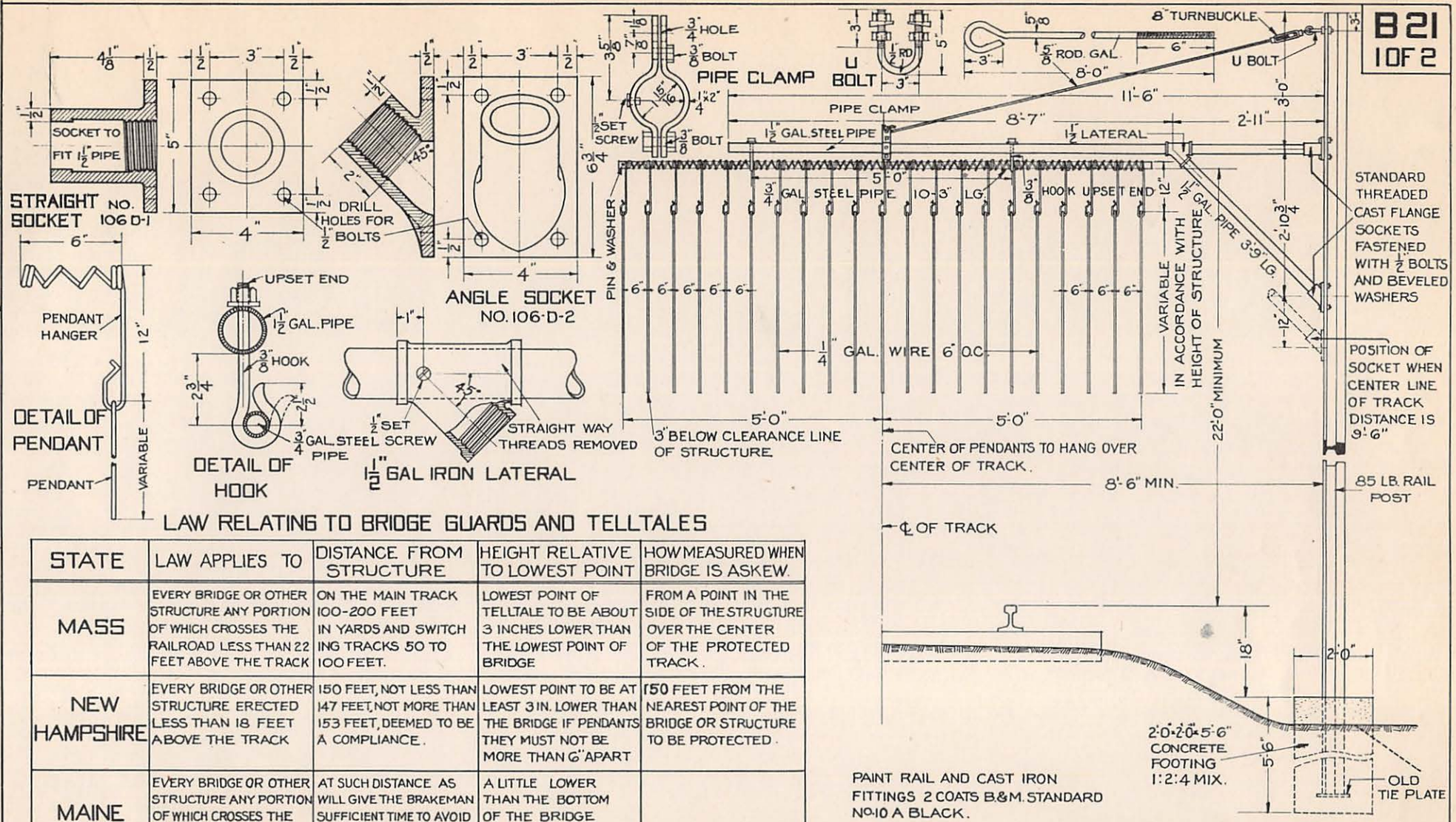
F. F. Fifield
ENGINEER M. OF W.

C. M. Burke
CHIEF ENGINEER

PLAN	
DRAWN BY ERM	
CHECKED BY E.F.B	
CORRECT J.J.R	
ISSUE	DATE
A	4-22-31
B	6-1-37
C	2-1-39
D	3-1-43
E	12-1-43
F	10-11-44

B-IRON PIPE TO STEEL PIPE. ADD HANGER DIMENSIONS.
C-APPROVAL DATE
D-SIZE OF SET SCREW ADDED
E-PAINT NO. CHANGED
F-MASS. LAW APPLICATION

B 21
1 OF 2


STRAIGHT SOCKET NO. 106 D-1
SOCKET TO FIT 1½" PIPE
DRILL HOLES FOR ½" BOLTS
ANGLE SOCKET NO. 106-D-2
PIPE CLAMP
U BOLT
8" TURNBUCKLE
U BOLT
PIPE CLAMP
1½" GAL. STEEL PIPE
1½" LATERAL
¾" GAL. STEEL PIPE 10'-3" LG.
⅜" HOOK UPSET END
PIN & WASHER
¼" GAL. WIRE 6" O.C.
VARIABLE IN ACCORDANCE WITH HEIGHT OF STRUCTURE
1½" GAL. PIPE 3'-9" LG.
STANDARD THREADED CAST FLANGE SOCKETS FASTENED WITH ½" BOLTS AND BEVELED WASHERS
POSITION OF SOCKET WHEN CENTER LINE OF TRACK DISTANCE IS 9'-6"
5'-0"
5'-0"
3" BELOW CLEARANCE LINE OF STRUCTURE.
CENTER OF PENDANTS TO HANG OVER CENTER OF TRACK.
22'-0" MINIMUM
8'-6" MIN.
℄ OF TRACK
85 LB. RAIL POST
PENDANT HANGER
DETAIL OF PENDANT
PENDANT
VARIABLE
UPSET END
1½" GAL. PIPE
⅜" HOOK
¾" GAL. STEEL PIPE
DETAIL OF HOOK
½" SET SCREW
STRAIGHT WAY THREADS REMOVED
1½" GAL IRON LATERAL
2'-0"×2'-0"×5'-6" CONCRETE FOOTING 1:2:4 MIX.
OLD TIE PLATE
PAINT RAIL AND CAST IRON FITTINGS 2 COATS B.&M. STANDARD NO. 10 A BLACK.

LAW RELATING TO BRIDGE GUARDS AND TELLTALES

STATE	LAW APPLIES TO	DISTANCE FROM STRUCTURE	HEIGHT RELATIVE TO LOWEST POINT	HOW MEASURED WHEN BRIDGE IS ASKEW.
MASS	EVERY BRIDGE OR OTHER STRUCTURE ANY PORTION OF WHICH CROSSES THE RAILROAD LESS THAN 22 FEET ABOVE THE TRACK	ON THE MAIN TRACK 100-200 FEET IN YARDS AND SWITCHING TRACKS 50 TO 100 FEET.	LOWEST POINT OF TELLTALE TO BE ABOUT 3 INCHES LOWER THAN THE LOWEST POINT OF BRIDGE	FROM A POINT IN THE SIDE OF THE STRUCTURE OVER THE CENTER OF THE PROTECTED TRACK.
NEW HAMPSHIRE	EVERY BRIDGE OR OTHER STRUCTURE ERECTED LESS THAN 18 FEET ABOVE THE TRACK	150 FEET, NOT LESS THAN 147 FEET, NOT MORE THAN 153 FEET, DEEMED TO BE A COMPLIANCE.	LOWEST POINT TO BE AT LEAST 3 IN. LOWER THAN THE BRIDGE IF PENDANTS THEY MUST NOT BE MORE THAN 6" APART	150 FEET FROM THE NEAREST POINT OF THE BRIDGE OR STRUCTURE TO BE PROTECTED.
MAINE	EVERY BRIDGE OR OTHER STRUCTURE ANY PORTION OF WHICH CROSSES THE RAILROAD LESS THAN 20 FEET ABOVE THE TRACK.	AT SUCH DISTANCE AS WILL GIVE THE BRAKEMAN SUFFICIENT TIME TO AVOID BEING HIT BY BRIDGE DISTANCE DEPENDS ON SPEED OF TRAINS	A LITTLE LOWER THAN THE BOTTOM OF THE BRIDGE	
VERMONT	ALL BRIDGES, HIGHWAY BRIDGES OR OTHER STRUCTURES THAT DO NOT LEAVE A CLEAR HEIGHT OF 22 FEET ABOVE RAIL	125 FEET IS SUFFICIENT.		
NEW YORK	EVERY BRIDGE, HIGHWAY BRIDGE OR STRUCTURE CROSSING THE RAILROAD LESS THAN 21 FEET ABOVE TOP OF RAIL.			

BILL OF MATERIAL

1-CONCRETE FOOTING 2'-0"×2'-0" 5'-6" DEEP 22 CUBIC FEET.
1-85 LB. RAIL LENGTH VARIABLE.
1-PIECE 1½" GAL. STEEL PIPE 11'-6" LG. AND 1-PIECE 3'-9" LONG.
1-PIECE ¾" GAL. STEEL PIPE 10'-3" LONG.
1-⅝" ROUND ROD GAL. 8'-0" LG. 1-½" RD. U BOLT BEVELED WASHERS & NUTS
2-SPECIAL CAST IRON SOCKETS AND ONE 1½" GAL. IRON LATERAL
2-SPECIAL ⅜" DIA. GALVANIZED STEEL HOOKS.
2-¼" DIA. GAL. STEEL PENDANTS 3'-0, 5'-0" AND 6'-0" LENGTHS
2-¼" DIA. GAL. STEEL PENDANTS HANGERS
8 SPECIAL BEVELED WASHERS FOR ½" BOLTS. 8-½"×2" BOLTS.
1-SPECIAL PIPE CLAMP WITH BOLTS. 1-8" GAL. TURNBUCKLE

APPROVED

F. F. Fiske
ENGINEER M. OF W.

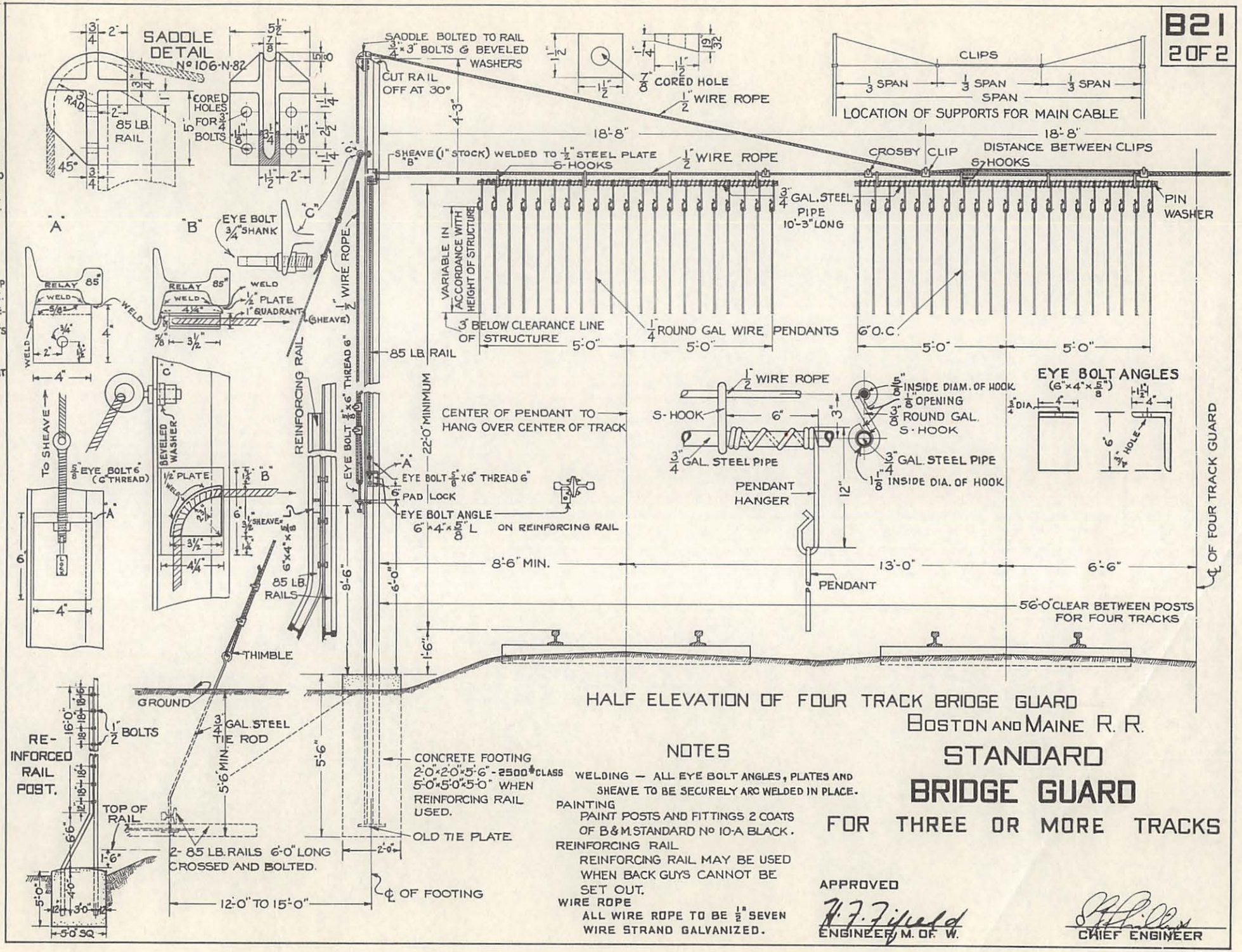
V. B. Brigham
CHIEF ENGINEER

BOSTON AND MAINE R. R.
STANDARD
BRIDGE GUARD
FOR ONE AND TWO TRACKS

B21
2 OF 2

PLAN	
DRAWN BY ERM	
CHECKED: E.F.B	
CORRECT J.J.R.	
ISSUE	DATE
A	4-22-31
B	6-1-37
C	2-1-39
D	6-14-41
E	12-14-45
F	11-28-51
G	7-13-53

B - IRON PIPE TO STEEL PIPE. ADD. HANGER DIMENSIONS.
C - APPROVAL DATE
D - TITLE - AND WIRE SPEC.
E - NEW RAIL CLIP AND SHACKLE.
F - REPLACEMENT:- TURNBUCKLES WITH EYE BOLTS
G - CHANGE IN METHOD OF ROPE ADJUSTMENT



HALF ELEVATION OF FOUR TRACK BRIDGE GUARD
BOSTON AND MAINE R. R.

STANDARD
BRIDGE GUARD
FOR THREE OR MORE TRACKS

NOTES

WELDING — ALL EYE BOLT ANGLES, PLATES AND SHEAVE TO BE SECURELY ARC WELDED IN PLACE.

PAINTING
PAINT POSTS AND FITTINGS 2 COATS OF B & M. STANDARD No 10-A BLACK.

REINFORCING RAIL
REINFORCING RAIL MAY BE USED WHEN BACK GUYS CANNOT BE SET OUT.

WIRE ROPE
ALL WIRE ROPE TO BE 1/2" SEVEN WIRE STRAND GALVANIZED.

APPROVED

W. F. Fifield
ENGINEER M. OF W.

CHIEF ENGINEER

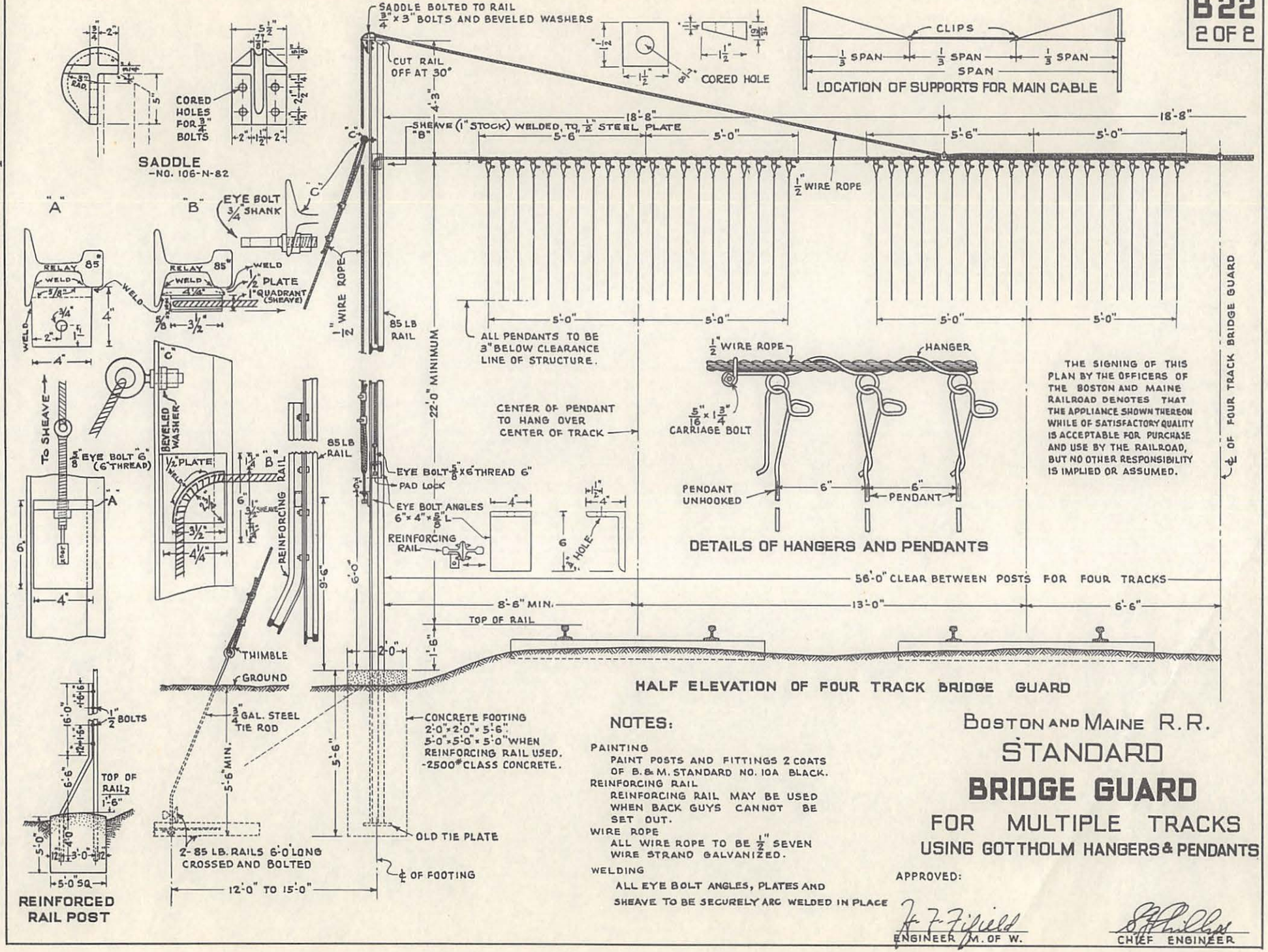
PLAN	
DRAWN	H.A.R.
CHECKED	F.W.H.
CORRECT	J.P.C.

ISSUE	DATE
A	5-24-49
B	11-28-51
C	7-13-53

B- REPLACEMENT OF TURNBUCKLES WITH EYE BOLTS

C- CHANGE IN METHOD OF ROPE ADJUSTMENT

B22
2 OF 2



NOTES:

PAINTING
PAINT POSTS AND FITTINGS 2 COATS OF B. & M. STANDARD NO. 10A BLACK.

REINFORCING RAIL
REINFORCING RAIL MAY BE USED WHEN BACK GUYS CANNOT BE SET OUT.

WIRE ROPE
ALL WIRE ROPE TO BE ½" SEVEN WIRE STRAND GALVANIZED.

WELDING
ALL EYE BOLT ANGLES, PLATES AND SHEAVE TO BE SECURELY ARC WELDED IN PLACE

BOSTON AND MAINE R.R.

STANDARD
BRIDGE GUARD
FOR MULTIPLE TRACKS
USING GOTTHOLM HANGERS & PENDANTS

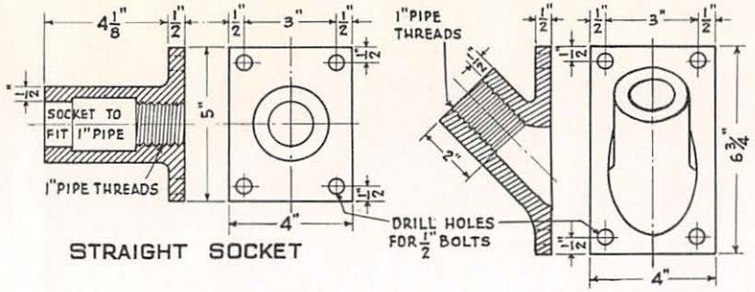
APPROVED:

J. F. Fifield
ENGINEER M. OF W.

S. H. Hilton
CHIEF ENGINEER

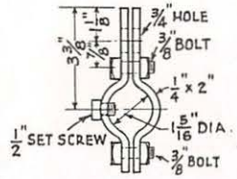
PLAN	
DRAWN	H.A.R.
CHECKED	F.W.H.
CORRECT	J.P.C.
ISSUE	DATE
A	5-24-49

B22
1 OF 2

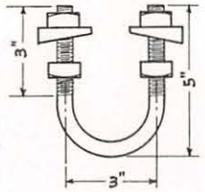


STRAIGHT SOCKET

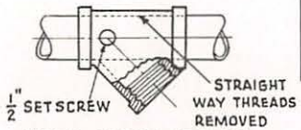
ANGLE SOCKET



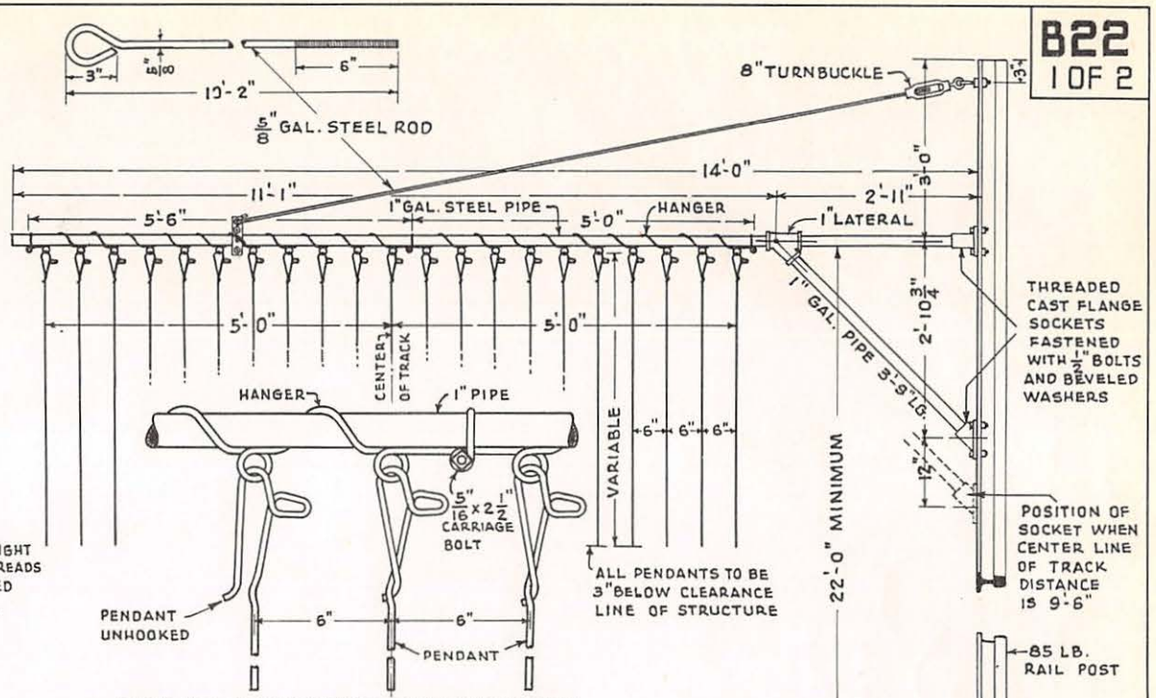
PIPE CLAMP



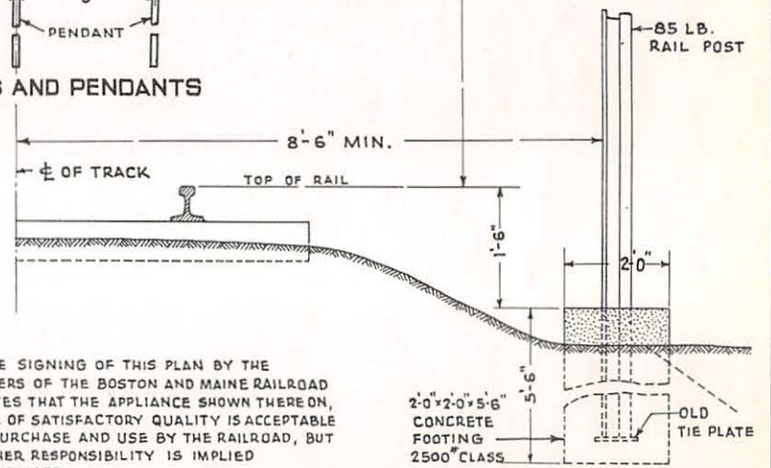
U BOLT



1" GAL. IRON LATERAL



DETAILS OF HANGERS AND PENDANTS



LAW RELATING TO BRIDGE GUARDS AND TELLTALES

STATE	LAW APPLIES TO	DISTANCE FROM STRUCTURE	HEIGHT RELATIVE TO LOWEST POINT	HOW MEASURED WHEN BRIDGE IS ASKEW
MASS.	EVERY BRIDGE OR OTHER STRUCTURE ANY PORTION OF WHICH CROSSES THE RAILROAD LESS THAN 22 FEET ABOVE THE TRACK.	ON THE MAIN TRACK 100-200 FEET. IN YARDS AND SWITCHING TRACKS 50 TO 100 FEET.	LOWEST POINT OF TELLTALE TO BE ABOUT 3 INCHES LOWER THAN THE LOWEST POINT OF BRIDGE.	FROM A POINT IN THE SIDE OF THE STRUCTURE OVER THE CENTER OF THE PROTECTED TRACK.
NEW HAMPSHIRE	EVERY BRIDGE OR OTHER STRUCTURE ERECTED LESS THAN 18 FEET ABOVE THE TRACK	150 FEET, NOT LESS THAN 147 FEET, NOR MORE THAN 153 FEET, DEEMED TO BE A COMPLIANCE.	LOWEST POINT TO BE AT LEAST 3 IN. LOWER THAN THE BRIDGE. IF PENDANTS THEY MUST NOT BE MORE THAN 6" APART.	150 FEET FROM THE NEAREST POINT OF THE BRIDGE OR STRUCTURE TO BE PROTECTED
MAINE	EVERY BRIDGE OR OTHER STRUCTURE, ANY PORTION OF WHICH CROSSES THE RAILROAD LESS THAN 20 FEET ABOVE THE TRACK	AT SUCH DISTANCE AS WILL GIVE THE BRAKEMAN SUFFICIENT TIME TO AVOID BEING HIT BY BRIDGE. DISTANCE DEPENDS ON SPEED OF TRAINS	A LITTLE LOWER THAN THE BOTTOM OF THE BRIDGE.	
VERMONT	ALL BRIDGES, HIGHWAY BRIDGES OR OTHER STRUCTURES THAT DO NOT LEAVE A CLEAR HEIGHT OF 22 FEET ABOVE RAIL	125 FEET IS SUFFICIENT		
NEW YORK	EVERY BRIDGE, HIGHWAY BRIDGE OR STRUCTURE CROSSING THE RAILROAD LESS THAN 21 FEET ABOVE TOP OF RAIL			

PAINT RAIL AND FITTINGS 2 COATS
B. & M. STANDARD NO. 10A BLACK

BILL OF MATERIAL

1 CONCRETE FOOTING 2'-0" x 2'-0" x 5'-6" = 22 CUBIC FEET
1 85 LB. RAIL - LENGTH VARIABLE.
2 PIECES 1" GAL. STEEL PIPE - 14'-0" AND 3'-9" LONG
1 5/8" GAL. ROUND ROD 10'-2" LONG - 1 8" TURNBUCKLE
1 1/2" RD. U BOLT & NUTS
2 SPECIAL CAST IRON SOCKETS AND ONE 1" GAL. LATERAL
10 SPECIAL BEVELED WASHERS FOR 1/2" BOLTS
8 1/2" x 2" GAL. BOLTS
1 SPECIAL PIPE CLAMP WITH BOLTS
2 GOTTHOLM HANGERS FOR 1" PIPE - 1-5'-0" AND 1-5'-6" LONG
21 " PENDANTS - LENGTH TO SUIT CONDITIONS

THE SIGNING OF THIS PLAN BY THE OFFICERS OF THE BOSTON AND MAINE RAILROAD DENOTES THAT THE APPLIANCE SHOWN THEREON, WHILE OF SATISFACTORY QUALITY IS ACCEPTABLE FOR PURCHASE AND USE BY THE RAILROAD, BUT NO OTHER RESPONSIBILITY IS IMPLIED OR ASSUMED.

BOSTON AND MAINE R.R.

STANDARD
BRIDGE GUARD

FOR ONE AND TWO TRACKS
USING GOTTHOLM HANGERS & PENDANTS

APPROVED:

H. F. Fifield
ENGINEER M. OF W.

S. H. Hilton
CHIEF ENGINEER

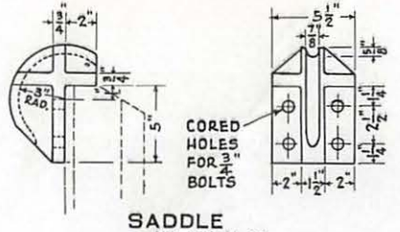
B-22-1

PLAN	
DRAWN	H.A.R.
CHECKED	F.W.H.
CORRECT	J.P.C.

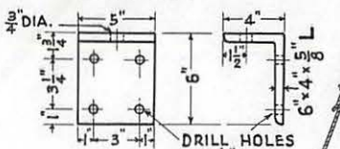
ISSUE	DATE
A	5-24-49
B	11-28-51

B-REPLACEMENT OF TURNBUCKLES WITH EYE BOLTS

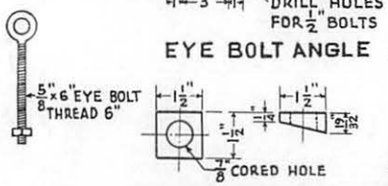
B22
2 OF 2



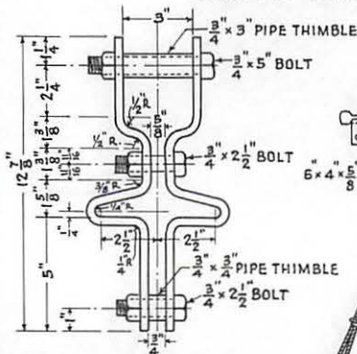
SADDLE
-NO. 106-N-82



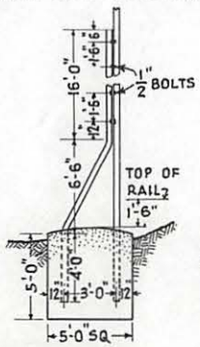
EYE BOLT ANGLE



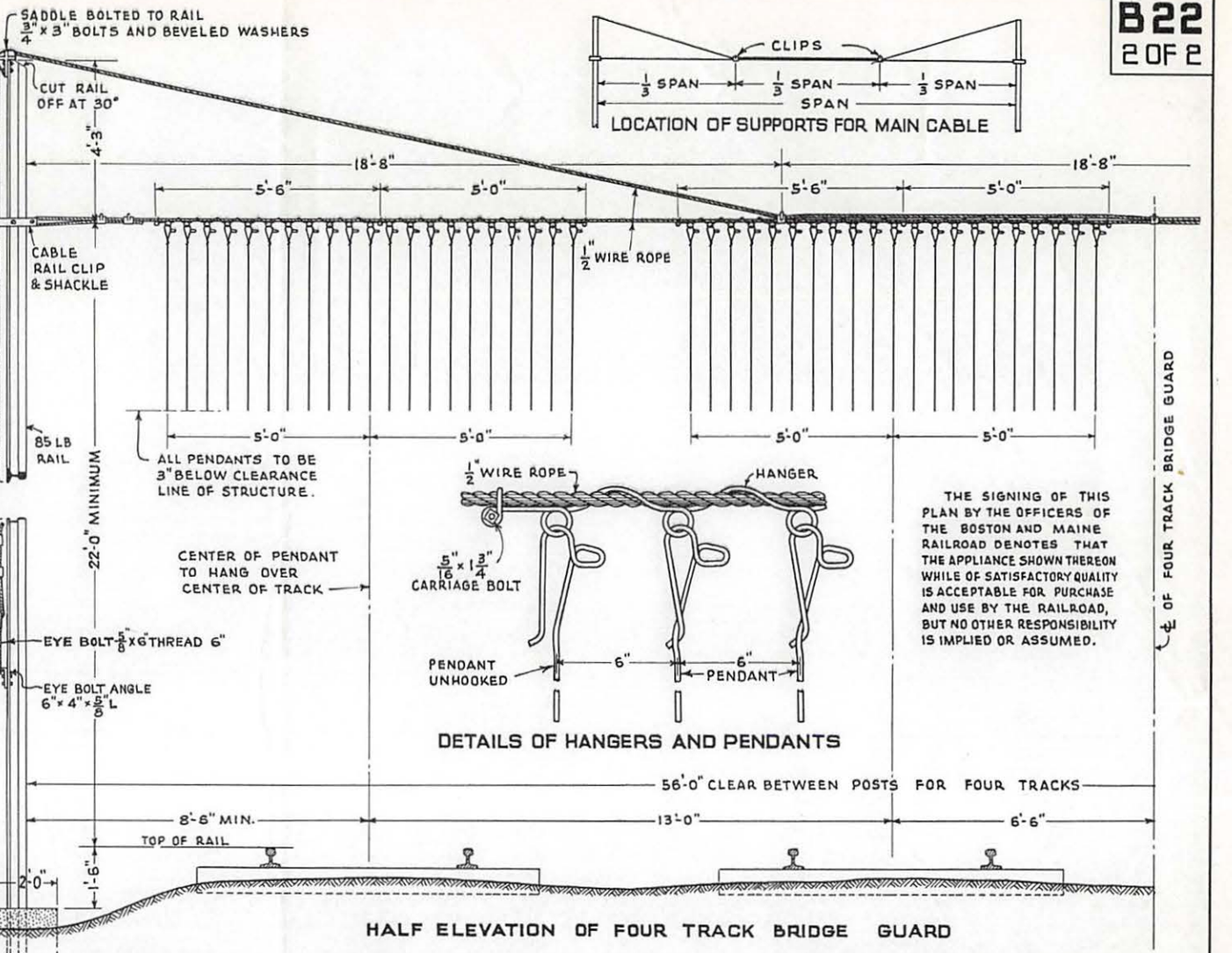
BEVELED WASHER



RAIL CLIP & SHACKLE



REINFORCED RAIL POST



HALF ELEVATION OF FOUR TRACK BRIDGE GUARD

LOCATION OF SUPPORTS FOR MAIN CABLE

DETAILS OF HANGERS AND PENDANTS

THE SIGNING OF THIS PLAN BY THE OFFICERS OF THE BOSTON AND MAINE RAILROAD DENOTES THAT THE APPLIANCE SHOWN THEREON WHILE OF SATISFACTORY QUALITY IS ACCEPTABLE FOR PURCHASE AND USE BY THE RAILROAD, BUT NO OTHER RESPONSIBILITY IS IMPLIED OR ASSUMED.

NOTES:

PAINTING
PAINT POSTS AND FITTINGS 2 COATS OF B. & M. STANDARD NO. 10A BLACK.
REINFORCING RAIL
REINFORCING RAIL MAY BE USED WHEN BACK GUYS CANNOT BE SET OUT.
WIRE ROPE
ALL WIRE ROPE TO BE ½" SEVEN WIRE STRAND GALVANIZED.

BOSTON AND MAINE R.R.

STANDARD
BRIDGE GUARD
FOR MULTIPLE TRACKS
USING GOTTHOLM HANGERS & PENDANTS

APPROVED:

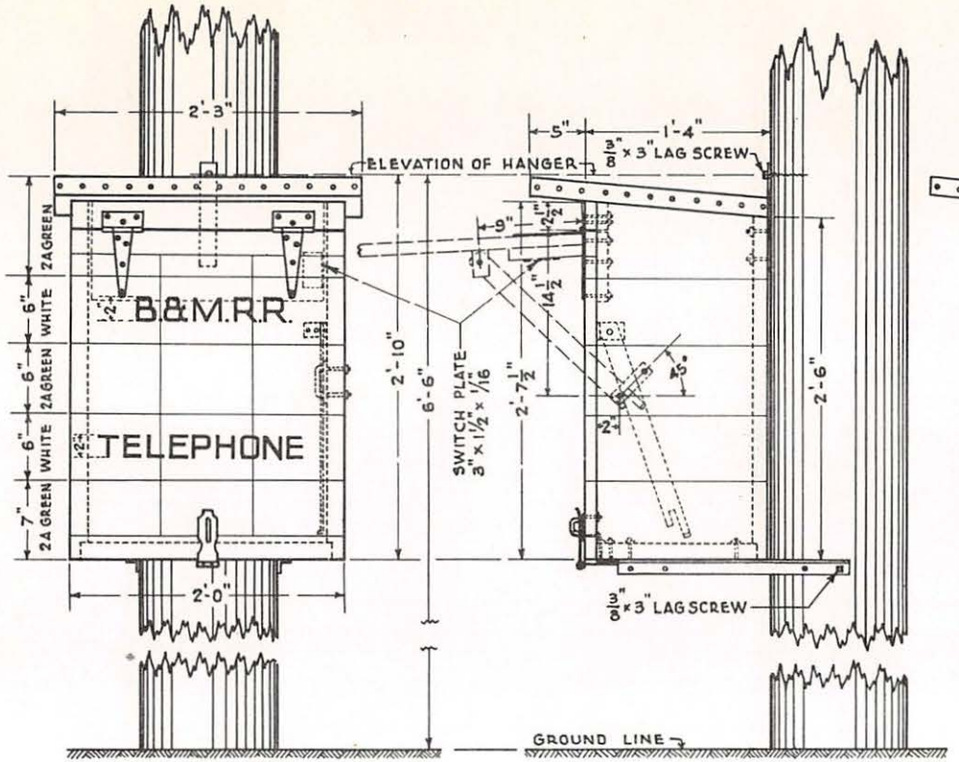
F. F. Fifield
ENGINEER M. OF W.

S. H. Phillips
CHIEF ENGINEER

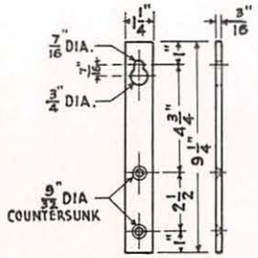
PLAN	
DRAWN	H.A.R.
CHECKED	F.W.H.
CORRECT	A.E.T.
ISSUE	DATE
B	10-29-49

B- REDRAWN

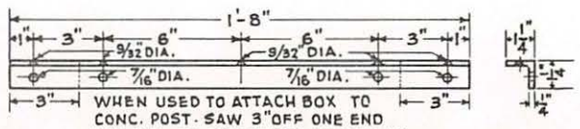
C 30



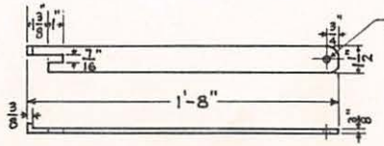
TELEPHONE BOX MOUNTED ON POLE



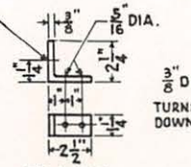
HANGER BAR



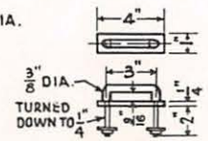
ANGLE BAR



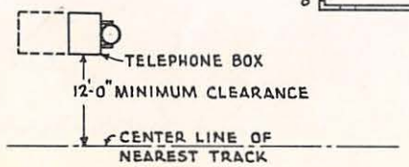
ARM BAR

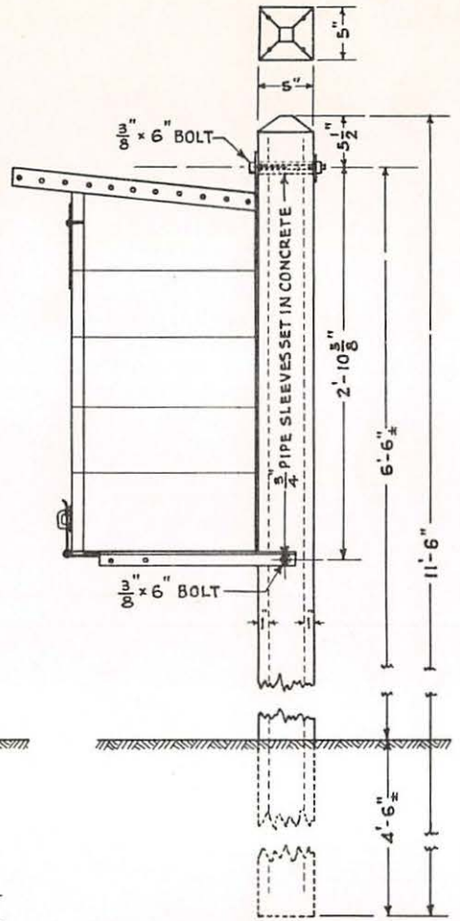


PLATE



GUIDE





TELEPHONE BOX ON CONCRETE POST

NOTES.

BOX – MATCHED WHITE PINE 1½" STOCK.
DOOR – MATCHED WHITE PINE 1" STOCK.
LOCK – B. & M. STANDARD SWITCH LOCK.
HINGES – 6" HEAVY TEE HINGES.
HASP – 4" DOUBLE HINGE HASP.
ROOF – READY ROOFING – HEAVY.
PAINTING – AS INDICATED – B. & M. STANDARD 2A GREEN AND WHITE ON FOUR SIDES. BLACK LETTERS.
BARS, HINGES AND HASP TO BE ATTACHED WITH ¼" FLAT HEAD STOVE BOLTS.
TELEPHONE BOX TO BE MOUNTED ON EXISTING POLE WHENEVER POSSIBLE. CONCRETE POST TO BE USED ONLY WITH SPECIAL PERMISSION.
CONCRETE POST TO BE 3500# CLASS. REINF. RODS TO BE 4 - ⅜" ø - 11'-2" LONG WITH #10 WIRE FOR SPACING.

BOSTON AND MAINE R.R.

STANDARD TELEPHONE BOX

APPROVED

E. M. Fox
ENGR. OF SIGNALS & TELEGRAPH

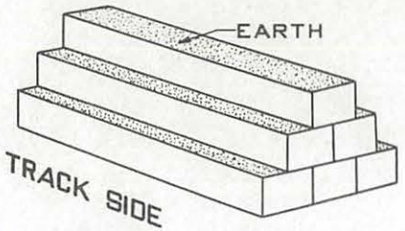
H. F. Fifield
ENGINEER M. OF W.

S. H. Phillips
CHIEF ENGINEER

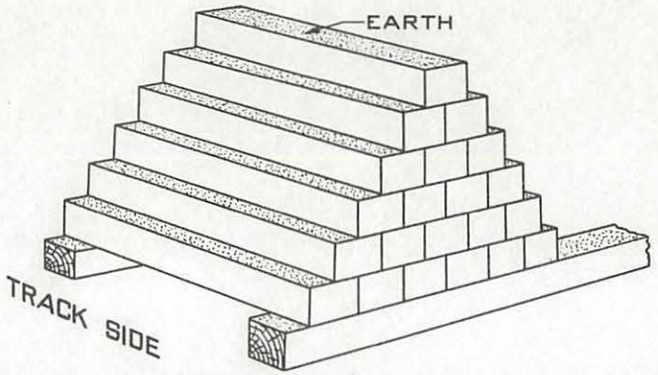
PLAN	
DRAWN BY P.L.D.	
CHECKED BY G.K.T.	
CORRECT J.N.R.	
ISSUE	DATE
A	4-23-29
B	8-18-31

B-EARTH ON M.L. AND YARD PILES

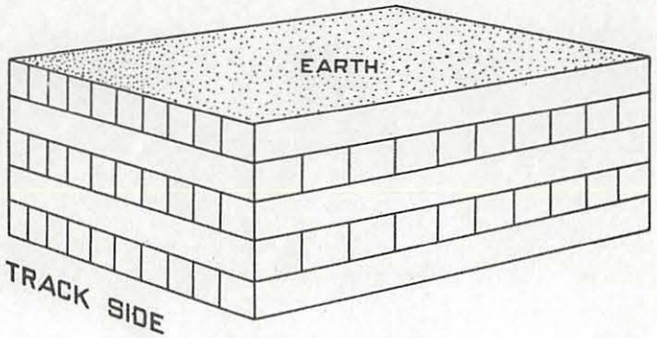
E-5



TREATED TIES
PILE Nº 1
3 TO 6
MAIN LINE



TREATED TIES
PILE Nº 2
6 TO 21
YARDS



TREATED TIES
PILE Nº 3

NOTES ON PILING OF TIES

PILES Nº 1 AND Nº 2

TIES TO BE LAID LENGTHWISE OF TRACK, PARALLEL TO AND FOLLOWING GRADE OF RAIL.
PILES Nº 1 TO BE NOT LESS THAN 4' APART.
PILES Nº 2 TO BE NOT LESS THAN 10' APART.

PILE Nº 3

WHEN NOT POSSIBLE TO PILE AS PER Nº 1 AND Nº 2, TIES MAY BE PILED ALONG MAIN LINE OR IN YARDS IN PILES OF 50 - COBBED UP SOLID, RESTING ON GROUND. COVER TOP OF PILE WITH 3" TO 4" LAYER OF EARTH. CLEAR SPACE BETWEEN PILES 20'. NOT LESS THAN 10' FROM NEAREST RAIL.

PILE Nº 4

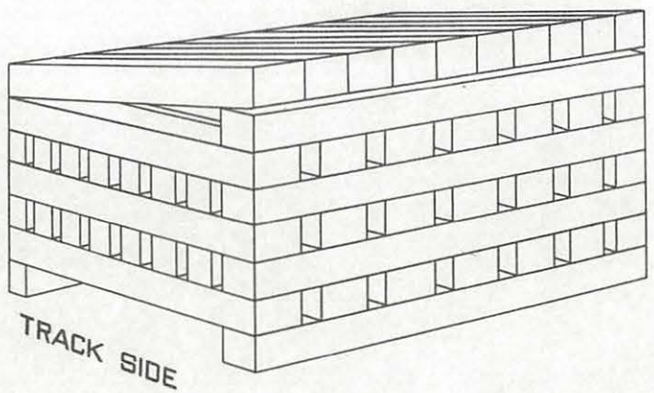
NATIVE OR UNTREATED TIES TO BE PILED AS SHOWN - AIR SPACE OF NOT LESS THAN 1" BETWEEN TIES. 50 TIES IN EACH PILE. CLEAR SPACE BETWEEN PILES 20'. NOT LESS THAN 10' FROM NEAREST RAIL.

GENERAL

TIES MUST NOT BE PILED WHERE THEY WOULD BE AFFECTED BY STANDING OR RUNNING WATER.

GRASS OR WEEDS MUST BE CLEARED FOR AT LEAST 4' AROUND EACH PILE.

NO TIES SHALL BE PILED UNDER OVERHEAD BRIDGES AND WHERE POSSIBLE NOT LESS THAN 50 FEET FROM ANY STRUCTURE.



UNTREATED TIES
PILE Nº 4

BOSTON & MAINE R. R.

STANDARD METHOD OF PILING TIES

Approved

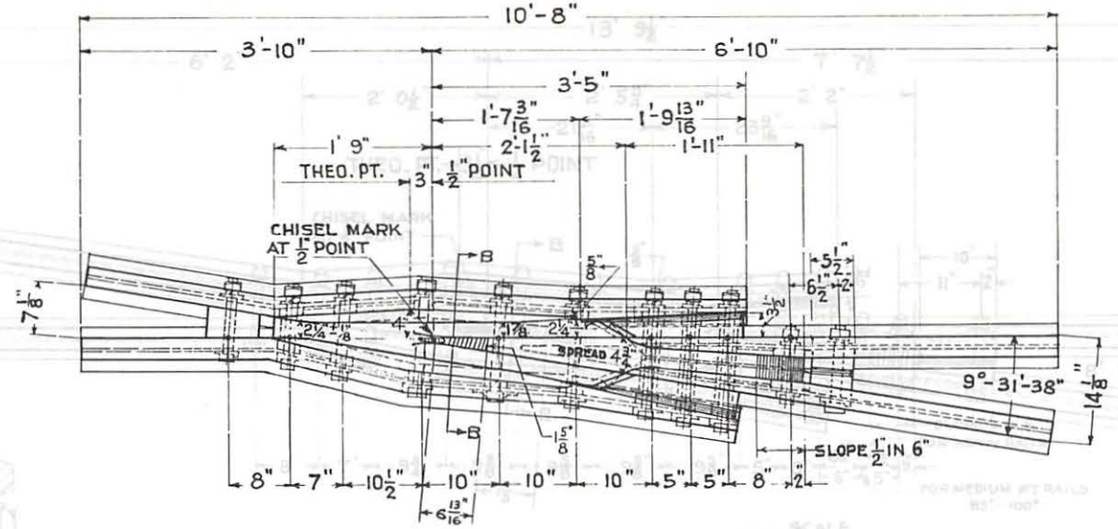
H. F. Fifield
Engineer M. of W.

Chief Engineer

F 6

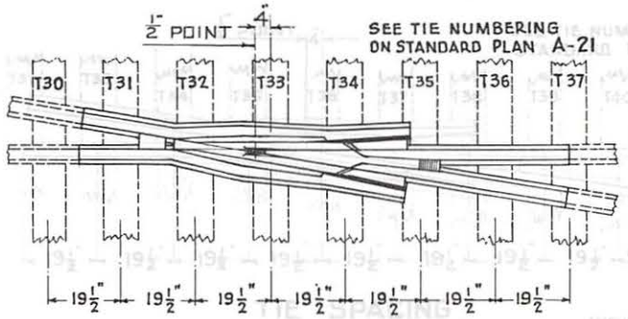
PLAN	
DRAWN. J.L.B.	
CHECKED H.A.R.	
CORRECT. J.J.R.	
ISSUE	DATE
A	10-20-30
B	10-22-31
C	2-3-36
D	11-1-37
E	2-1-39
F	3-17-43
G	12-15-47
H	7-15-48
I	1-23-53

B WHEEL RISERS
C CHANGE IN FLANGE WAY 1 3/4" TO 1 7/8". FROG LENGTH - 10'0" TO 10'-8". TIE SPACING. 112 & 131 RAILADDED A.R.E.A. DESIGN.
D - MANGANESE CASTING CHANGE
E - APPROVAL DATE
F - MAKE PLATES 1" THICK
G - 115# RAIL ADDED. WING WHEEL RISER REMOVE
H - TIES RENUMBERED
I - DEPRESSED FROG POINT 3/16



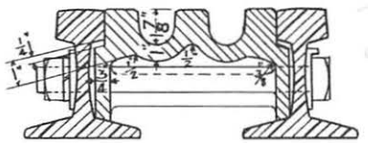
SCALE
INCHES 12 6 0
0 1 2 FEET

NOTE:- ACTUAL FROG POINT TO BE 3/16" BELOW WING LEVEL; SLOPING TO ZERO AT 1 5/8" WIDTH OF POINT (TOP SLOPE 3/16" IN 6 13/16")

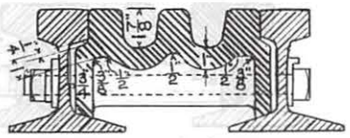


TIE SPACING

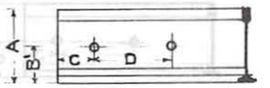
SCALE
INCHES 12 6 0
0 1 2 3 FEET



SECTION B-B
FOR 100 LB. AND HEAVIER RAILS.



SECTION B-B
FOR 85 LB. RAILS



RAIL	DRILLING FOR JOINTS				DIAM OF JOINT	BOLTS DIAM. OVER THREADS	
WEIGHT	A	B'	C	D	HOLE	JOINT	FROG
85#	5 5/16"	2 17/64"	2 15/16"	6"	1 3/32"	15/16"	1 1/8"
100#	6"	2 33/64"	2 7/16"	7"	1 7/32"	1 1/16"	1 1/4"
112#	6 5/8"	2 7/8"	2 1/2"	6 1/2"	1 1/4"	1 1/8"	1 3/8"
130#	6 3/4"	3 1/16"	2 13/32"	5 1/2"	1 1/4"	1 1/8"	1 3/8"
131#	7 1/8"	3 3/32"	2 1/2"	6 1/2"	1 1/4"	1 1/8"	1 3/8"
115#	6 5/8"	2 7/8"	3 1/2"	6"	1 1/4"	1 1/8"	1 3/8"

NOTES:-

DESIGN, DETAILS AND CONSTRUCTION SHALL CONFORM TO THE PLANS ADOPTED BY THE AMERICAN RAILWAY ENGINEERING ASSOCIATION AS RECOMMENDED PRACTICE.

REFERENCES TO A.R.E.A. TRACKWORK PLANS:-
#600 - DATA AND SECTIONS. #600-B- FROG POINT AND FLANGEWAYS.
#601-3 GENERAL PLAN. NOTE-NO. 3.

FROG BOLTS- A.R.E.A. SPECIFICATIONS 1936. FOR HIGH TENSILE STRENGTH, QUENCHED CARBON BOLTS WITH SQUARE HEADS, EXTRA HEAVY SQUARE NUTS, NUT LOCKS, ROLLED STEEL ANGLE WASHERS AND HEAD LOCKS; MANG. HOLES 1/4" LARGER THAN FROG BOLT DIA.

PLATES- THICKNESS 1", FURNISHED ONLY WHEN SPECIFIED. FOOT GUARDS FURNISHED BY R.R.

WORKMANSHIP AND MATERIALS- A.R.E.A. SPECIFICATIONS FOR GENERAL TRACKWORK.

NOTES- ON FROG CASTING FOR - 100#-112#-115#-130#-131# RAILS.

BOLT SHROUDS TO BE ELIMINATED. CROSS RIBS BETWEEN THE SIDE WALLS TO BE S-SHAPED. CROSS RIBS TO BE ATTACHED TO SIDE WALLS ONLY, AND TO BE PLACED APPROXIMATELY EVERY SECOND BOLT SPACING AND OCCUR BETWEEN BOLT HOLES.

I BEAM DESIGN TO BE USED IN HEEL EXTENSION.

BOSTON AND MAINE R. R.

No. 6 RAIL BOUND MANGANESE STEEL FROG

A.R.E.A. DESIGN - MARCH 1937.

APPROVED

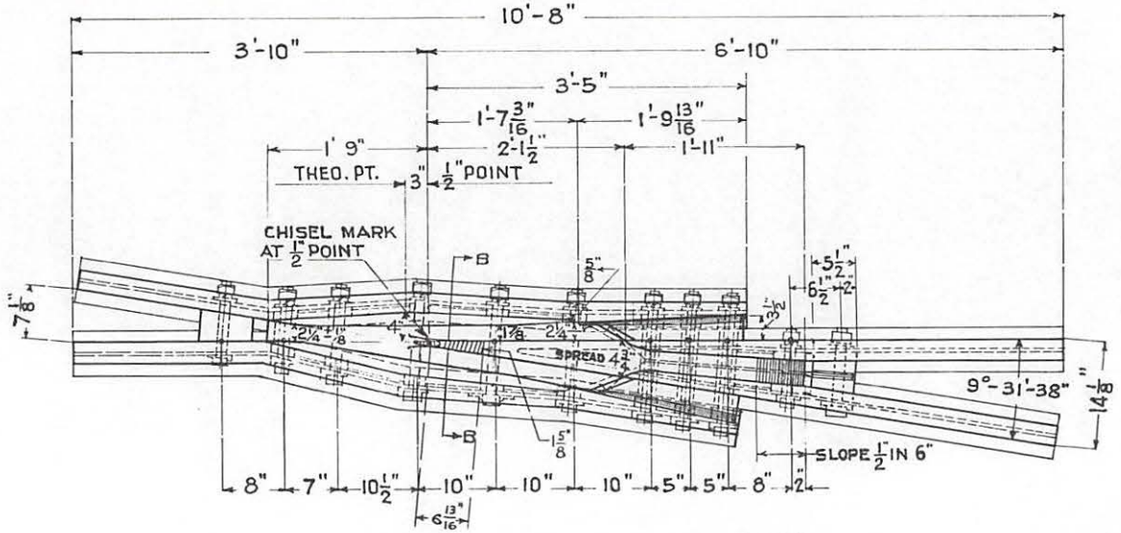
H. J. Fitzell
ENGINEER M. OF W.

S. G. Phillips
CHIEF ENGINEER

F 6

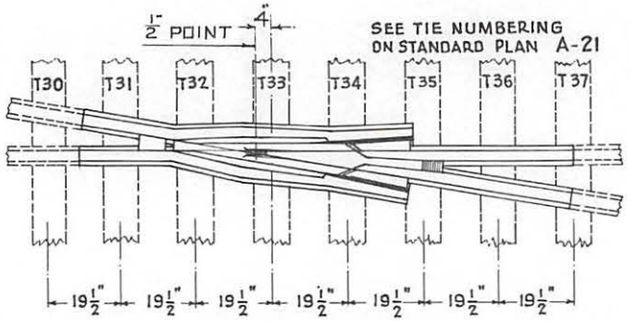
PLAN	
DRAWN. J.L.B.	
CHECKED J.A.R.	
CORRECT. J.J.R.	
ISSUE	DATE
A	10-20-30
B	10-22-31
C	2-3-36
D	11-1-37
E	2-1-39
F	3-17-43
G	12-15-47
H	7-15-48
I	1-23-53

B WHEEL RISERS
C CHANGE IN FLANGE WAY $1\frac{3}{4}$ TO $1\frac{7}{8}$. FROG LENGTH - 10'0" TO 10'-8". TIE SPACING. 112# & 131# RAIL ADDED A.R.E.A. DESIGN.
D - MANGANESE CASTING CHANGE
E - APPROVAL DATE
F - MAKE PLATES 1" THICK
G - 115# RAIL ADDED. WING WHEEL RISER REMOVED
H - TIES RENUMBERED
I - DEPRESSED FROG POINT 3/16"



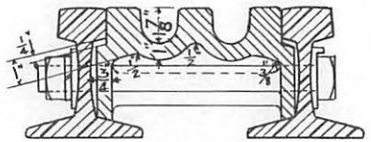
SCALE
INCHES 12 6 0
0 1 2 FEET

NOTE:- ACTUAL FROG POINT TO BE 3/16" BELOW WING LEVEL; SLOPING TO ZERO AT 1 5/8" WIDTH OF POINT (TOP SLOPE 3/16" IN 6 13/16")

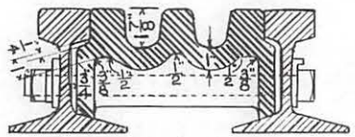


TIE SPACING

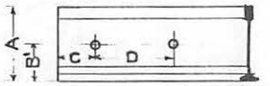
SCALE
INCHES 12 6 0
0 1 2 3 FEET



SECTION B-B
FOR 100 LB. AND HEAVIER RAILS.



SECTION B-B
FOR 85 LB. RAILS



RAIL DRILLING FOR JOINTS					DIAM OF JOINT	BOLTS DIAM. OVER THREADS	
WEIGHT	A	B'	C	D	HOLE	JOINT	FROG
85#	5 5/16"	2 17/64"	2 5/16"	6"	1 3/32"	15/16"	1 1/8"
100#	6"	2 39/64"	2 7/16"	7"	1 7/32"	1 1/16"	1 1/4"
112#	6 5/8"	2 7/8"	2 1/2"	6 1/2"	1 1/4"	1 1/8"	1 3/8"
130#	6 3/4"	3 1/16"	2 13/32"	5 1/2"	1 1/4"	1 1/8"	1 3/8"
131#	7 1/8"	3 3/32"	2 1/2"	6 1/2"	1 1/4"	1 1/8"	1 3/8"
115#	6 5/8"	2 7/8"	3 1/2"	6"	1 1/4"	1 1/8"	1 3/8"

NOTES:-

DESIGN, DETAILS AND CONSTRUCTION SHALL CONFORM TO THE PLANS ADOPTED BY THE AMERICAN RAILWAY ENGINEERING ASSOCIATION AS RECOMMENDED PRACTICE.

REFERENCES TO A.R.E.A. TRACKWORK PLANS:-
#600 - DATA AND SECTIONS. #600-B FROG POINT AND FLANGEWAYS.
#601-3 GENERAL PLAN. NOTE-NO. 3.

FROG BOLTS- A.R.E.A. SPECIFICATIONS 1936. FOR HIGH TENSILE STRENGTH, QUENCHED CARBON BOLTS WITH SQUARE HEADS, EXTRA HEAVY SQUARE NUTS, NUT LOCKS, ROLLED STEEL ANGLE WASHERS AND HEAD LOCKS; MANG. HOLES 1/4" LARGER THAN FROG BOLT DIA.

PLATES- THICKNESS 1", FURNISHED ONLY WHEN SPECIFIED. FOOT GUARDS FURNISHED BY R.R.

WORKMANSHIP AND MATERIALS- A.R.E.A. SPECIFICATIONS FOR GENERAL TRACKWORK.

NOTES:- ON FROG CASTING FOR - 100#-112#-115#-130#-131# RAILS.
BOLT SHROUDS TO BE ELIMINATED. CROSS RIBS BETWEEN THE SIDE WALLS TO BE S-SHAPED. CROSS RIBS TO BE ATTACHED TO SIDE WALLS ONLY, AND TO BE PLACED APPROXIMATELY EVERY SECOND BOLT SPACING AND OCCUR BETWEEN BOLT HOLES. I BEAM DESIGN TO BE USED IN HEEL EXTENSION.

BOSTON AND MAINE R. R.

No. 6 RAIL BOUND MANGANESE STEEL FROG

A.R.E.A. DESIGN - MARCH 1937.

APPROVED

J. J. Fifield
ENGINEER M. OF W.

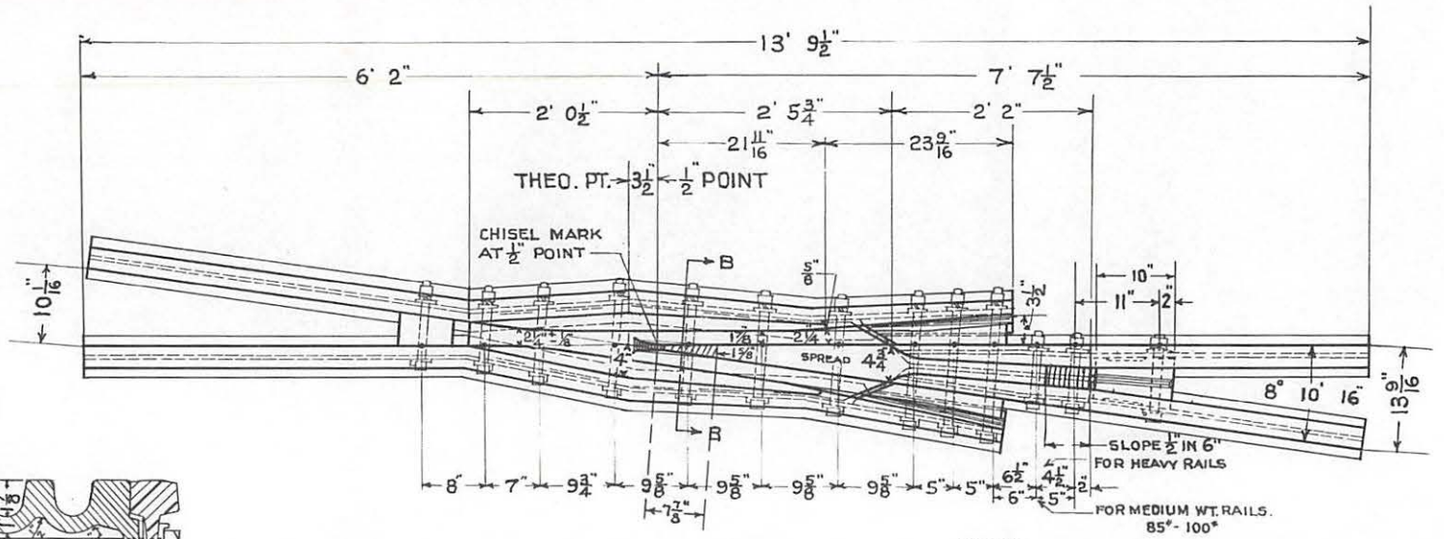
S. G. Phillips
CHIEF ENGINEER

F 7

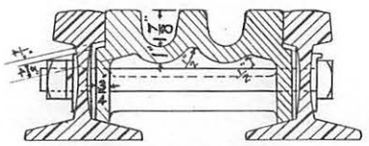
PLAN	
DRAWN	J.L.B
CHECKED	J.A.R.
CORRECT	J.J.R.

ISSUE	DATE
A	10-20-30
B	10-22-31
C	2-3-36
D	11-1-37
E	2-1-39
F	3-17-43
G	12-15-47
H	7-15-48
I	1-23-53

B WHEEL RISER ADDED
C-CHANGE IN FLANGE WAY $1\frac{3}{4}$" TO $1\frac{7}{8}$". FROG LENGTH 12'0" TO 13'$9\frac{1}{2}$". TIE SPACING. 112# & 131# RAIL ADDED. A.R.E.A. DESIGN.
D-MANGANESE CASTING CHANGE
E-APPROVAL DATE
F-MAKE PLATES 1" THICK
G-115# RAIL ADDED. WING WHEEL RISER REMOVED
H-TIES RENUMBERED
I-DEPRESSED FROG POINT $\frac{3}{16}$"

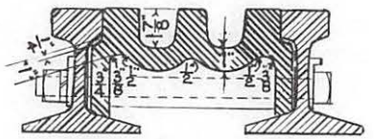


SCALE
INCHES 12 6 0
0 1 2 FEET

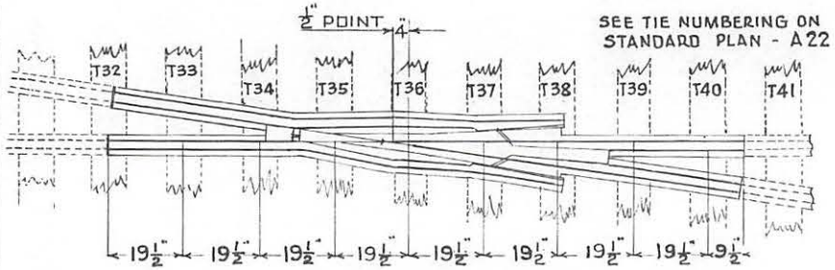


SECTION-B-B
FOR 100 LB. AND HEAVIER RAILS.

NOTE:- ACTUAL FROG POINT TO BE $\frac{3}{16}$" BELOW WING LEVEL; SLOPING TO ZERO AT 1⅝" WIDTH OF POINT (TOP SLOPE $\frac{3}{16}$" IN $\frac{7}{8}$")



SECTION B-B
FOR 85 LB. RAIL



TIE SPACING

SCALE
INCHES 12 6 0
0 1 2 3 FEET

RAIL DRILLING FOR JOINTS					DIAM OF JOINT HOLE	BOLTS DIAM OVER THREADS	
WEIGHT	A	B'	C	D		JOINT	FROG
85#	5 3/16"	2 17/64"	2 15/16"	6"	1 3/32"	15/16"	1⅛"
100#	6"	2 39/64"	2 7/16"	7"	1 3/32"	1 1/16"	1¼"
112#	6⅝"	2⅞"	2½"	6½"	1¼"	1⅛"	1⅜"
130#	6¾"	3 1/16"	2 13/32"	5½"	1¼"	1⅛"	1⅜"
131#	7⅛"	3 3/32"	2½"	6½"	1¼"	1⅛"	1⅜"
115#	6 5/16"	2⅞"	3½"	6"	1¼"	1⅛"	1 3/8"

NOTES -

DESIGN, DETAILS AND CONSTRUCTION SHALL CONFORM TO THE PLANS ADOPTED BY THE AMERICAN RAILWAY ENGINEERING ASSOCIATION AS RECOMMENDED PRACTICE.

REFERENCES TO A.R.E.A. TRACKWORK PLANS:-
#600 - DATA AND SECTIONS. #600-B- FROG POINT AND FLANGEWAYS.
#601-3 GENERAL PLAN. NOTE NO. 3

FROG BOLTS- A.R.E.A. SPECIFICATIONS 1936 FOR HIGH TENSILE STRENGTH, QUENCHED CARBON BOLTS WITH SQUARE HEADS, EXTRA HEAVY SQUARE NUTS, NUT LOCKS, ROLLED STEEL ANGLE WASHERS AND HEAD LOCKS. MANG. HOLES ¼" LARGER THAN FROG BOLT DIA.

PLATES - THICKNESS 1". FURNISHED ONLY WHEN SPECIFIED. FOOT GUARDS FURNISHED BY R.R.

WORKMANSHIP AND MATERIALS- A.R.E.A. SPECIFICATIONS FOR GENERAL TRACKWORK.

NOTE - ON FROG CASTING FOR- 100#-112#-115#-130#-131# RAILS.
BOLT SHROUDS TO BE ELIMINATED. CROSS RIBS BETWEEN THE SIDE WALLS TO BE S-SHAPES. CROSS RIBS TO BE ATTACHED TO SIDE WALLS ONLY, AND TO BE PLACED APPROXIMATELY EVERY SECOND BOLT SPACING AND OCCUR BETWEEN BOLT HOLES.
I BEAM DESIGN TO BE USED IN HEEL EXTENSION.

BOSTON AND MAINE R. R.

No. 7 RAIL BOUND MANGANESE STEEL FROG

A.R.E.A. DESIGN - MARCH 1937

APPROVED

H. J. Fifield
ENGINEER M. OF W.

S. G. Phillips
CHIEF ENGINEER

PLAN	
DRAWN	J.L.B
CHECKED	H.A.R.
CORRECT	J.J.R.

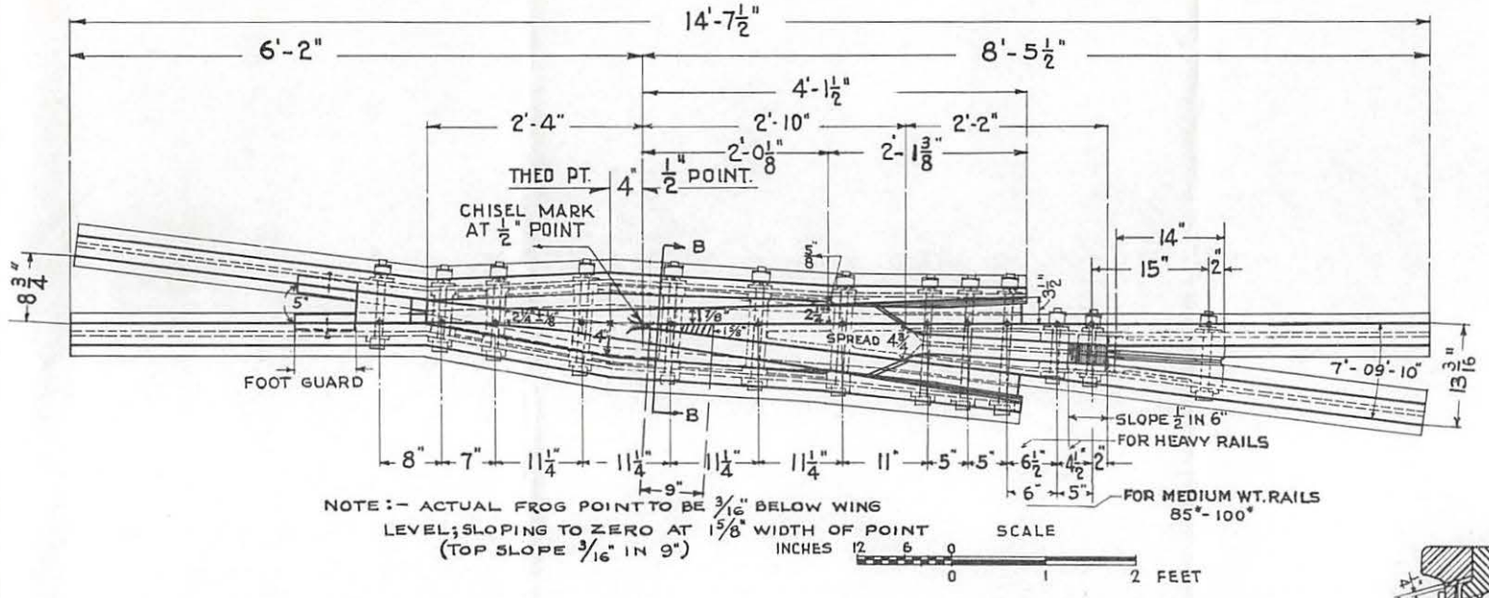
ISSUE	DATE
A	4-16-29
B	9-20-29
C	10-22-31
D	2-3-36
E	11-1-37
F	2-1-39
G	3-17-43
H	12-15-47

B PLATES ADDED
C WHEEL RISERS "
D- CHANGE IN FLANGEWAY 1¾" TO 1⅞"
- FROG LENGTH 13'-0" TO 14'-7½"
- TIE SPACING 112# & 131# RAIL ADDED A.R.E.A. DESIGN
E- MANGANESE CASTING CHANGE
F- APPROVAL DATE
G- MAKE PLATES 1" THICK
H- 115# RAIL ADDED. WHEEL RISER REMOVED
I- 7-15-48 - TIES RENUMBERED

ISSUE	DATE
I	7-15-48
J	1-23-53

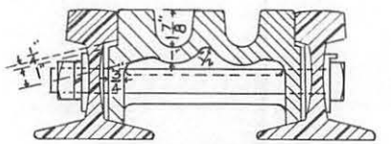
J- DEPRESSED FROG POINT 3/16"

F 8

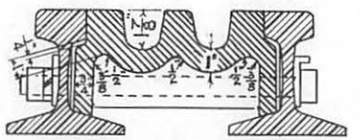


NOTE:- ACTUAL FROG POINT TO BE 3/16" BELOW WING LEVEL; SLOPING TO ZERO AT 1⅝" WIDTH OF POINT (TOP SLOPE 3/16" IN 9")

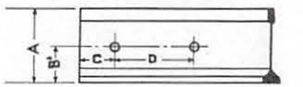
SCALE
INCHES 12 6 0
0 1 2 FEET

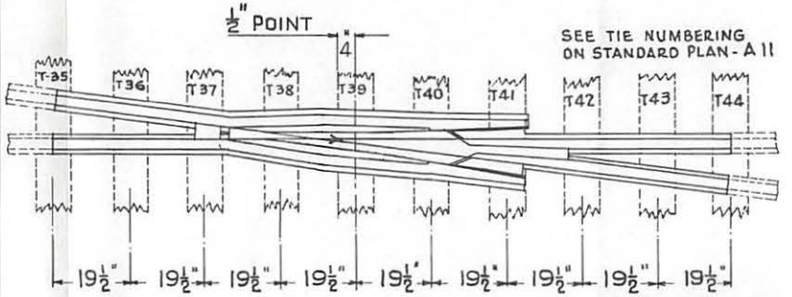


SECTION B-B
FOR 100 LB. AND HEAVIER RAILS



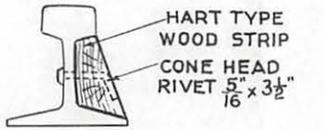
SECTION B-B
FOR 85 LB. RAILS





TIE SPACING

SCALE
INCHES 12 6 0
0 1 2 3 FEET



FOOT GUARD

RAIL DRILLING FOR JOINTS.					DIAM. OF JOINT	BOLTS DIAM. OVER THREADS.	
WEIGHT	A	B'	C	D	HOLE	JOINT	FROG
85#	5 3/16"	2 17/64"	2 15/16"	6"	1 3/32"	15/16"	1⅛"
100#	6"	2 39/64"	2 7/16"	7"	1 3/32"	1 1/16"	1¼"
112#	6 5/8"	2⅞"	2½"	6½"	1¼"	1⅛"	1⅜"
130#	6¾"	3 1/16"	2 13/32"	5½"	1¼"	1⅛"	1⅜"
131#	7⅛"	3 3/32"	2½"	6½"	1¼"	1⅛"	1⅜"
115#	6 5/8"	2⅞"	3½"	6"	1¼"	1⅛"	1⅜"

NOTES:-

DESIGN, DETAILS AND CONSTRUCTION SHALL CONFORM TO THE PLANS ADOPTED BY THE AMERICAN RAILWAY ENGINEERING ASSOCIATION AS RECOMMENDED PRACTICE.

REFERENCES TO A·R·E·A· TRACKWORK PLANS.-
#600 - DATA AND SECTIONS. #600-B- FROG POINT AND FLANGEWAYS.
#601-3 GENERAL PLAN. NOTE NO. 3

FROG BOLTS- A.R.E.A SPECIFICATIONS 1936 FOR HIGH TENSILE STRENGTH, QUENCHED CARBON BOLTS WITH SQUARE HEADS, EXTRA HEAVY SQUARE NUTS, NUT LOCKS, ROLLED STEEL ANGLE WASHERS AND HEAD LOCKS. MANG. HOLES ¼" LARGER THAN FROG BOLT DIA.

PLATES - THICKNESS 1". FURNISHED ONLY WHEN SPECIFIED. FOOT GUARDS FURNISHED BY R.R.

WORKMANSHIP AND MATERIALS- A·R·E·A· SPECIFICATIONS FOR GENERAL TRACKWORK.

NOTES:- ON FROG CASTING FOR - 100# 112# 115# 130# 131# RAILS.
BOLT SHROUDS TO BE ELIMINATED. CROSS RIBS BETWEEN THE SIDE WALLS TO BE S-SHAPED. CROSS RIBS TO BE ATTACHED TO SIDE WALLS ONLY, AND TO BE PLACED APPROXIMATELY EVERY SECOND BOLT SPACING AND OCCUR BETWEEN BOLT HOLES.
I BEAM DESIGN TO BE USED IN HEEL EXTENSION.

BOSTON AND MAINE R.R.

STANDARD
Nº 8 RAIL BOUND
MANGANESE STEEL FROG

A.R.E.A. DESIGN — MARCH 1937

APPROVED

H. F. Fifield
ENGINEER M. OF W.

S. J. Phillips
CHIEF ENGINEER.

F 9

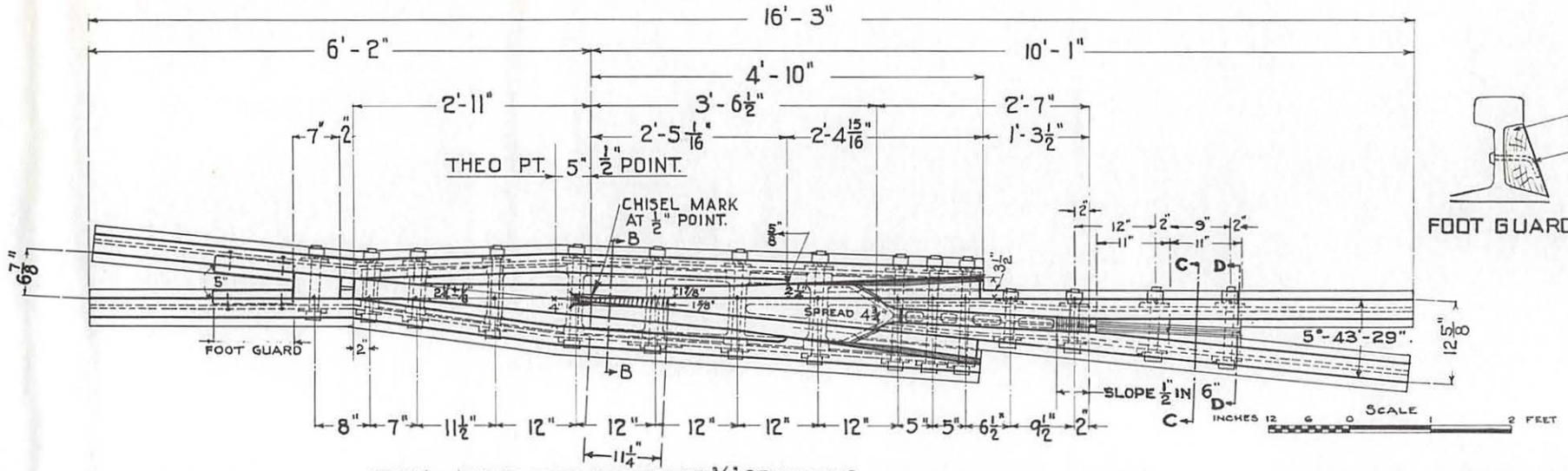
PLAN	
DRAWN	E·A·C
CHECKED	J.L.B
CORRECT	J.J.R.

ISSUE	DATE
A	2-25-29
B	9-20-29
C	10-22-31
D	2-3-36
E	11-1-37
F	2-1-39
G	3-17-43
H	12-15-47

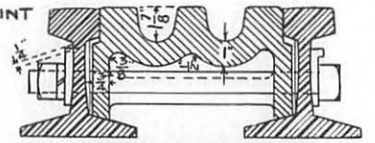
B PLATES ADDED.
C WHEEL RISERS. FLANGEWAY 1¾" TO 1⅞" FROG LENGTH 16'6" TO 16'3" TIE SPACING 112#&131# RAIL, A.R.E.A. DESIGN.
E - MANGANESE CASTING CHANGE
F - APPROVAL DATE
G - MAKE PLATES 1" THICK
H - 115# RAIL ADDED. WHEEL RISER REMOVED
I - 7-15-48 TIES RENUMBERED.

ISSUE	DATE
I	7-15-48
J	1-23-53

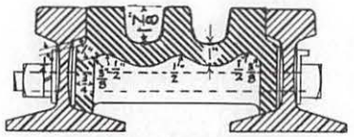
J - DEPRESSED FROG POINT 3/16"



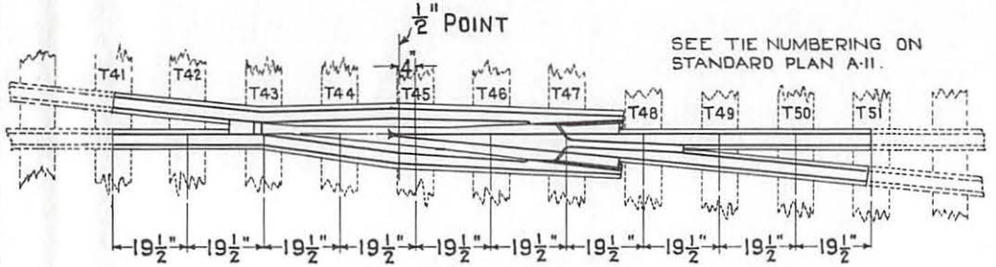
NOTE :- ACTUAL FROG POINT TO BE 3/16" BELOW WING LEVEL; SLOPING TO ZERO AT 1⅝" WIDTH OF POINT (TOP SLOPE 3/16" IN 11¼")



SECTION B-B
FOR 100 LB. AND HEAVIER RAILS

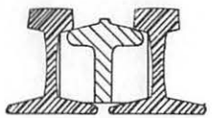


SECTION B-B
FOR 85 LB RAIL ONLY

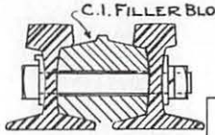

½" POINT
SEE TIE NUMBERING ON STANDARD PLAN A-11.
T41 T42 T43 T44 T45 T46 T47 T48 T49 T50 T51
4"
19½" 19½" 19½" 19½" 19½" 19½" 19½" 19½" 19½" 19½"

TIE SPACING

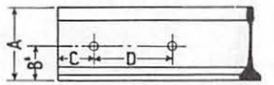
SCALE INCHES 12 6 0 — 0 1 2 3 FEET



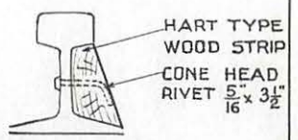
SECTION C-C
FOR 100 LB. & HEAVIER RAILS



SECTION D-D



RAIL DRILLING FOR JOINTS					DIAM. OF JOINT	BOLTS DIAM. OVER THREADS	
WEIGHT	A	B'	C	D	HOLE	JOINT	FROG
85#	5 3/16"	2 1/64"	2 15/16"	6"	1 3/32"	15/16"	1 1/8"
100#	6"	2 39/64"	2 7/16"	7"	1 3/32"	1 1/16"	1 1/4"
112#	6 5/8"	2 7/8"	2½"	6½"	1¼"	1⅛"	1⅜"
130#	6¾"	3 1/16"	2 13/32"	5½"	1¼"	1⅛"	1⅜"
131#	7⅛"	3 3/32"	2½"	6½"	1¼"	1⅛"	1⅜"
115#	6 5/8"	2 7/8"	3½"	6"	1¼"	1⅛"	1⅜"



FOOT GUARD

NOTES:-

DESIGN, DETAILS AND CONSTRUCTION SHALL CONFORM TO THE PLANS ADOPTED BY THE AMERICAN RAILWAY ENGINEERING ASSOCIATION AS RECOMMENDED PRACTICE.

REFERENCES TO A·R·E·A· TRACKWORK PLANS.—
#600 - DATA AND SECTIONS. #600-B- FROG POINT & FLANGEWAYS.
#604-5- GENERAL PLAN. NOTE NO. 3.

FROG BOLTS- A.R.E.A. SPECIFICATIONS 1936 FOR HIGH TENSILE STRENGTH, QUENCHED CARBON BOLTS WITH SQUARE HEADS, EXTRA HEAVY SQUARE NUTS, NUT LOCKS, ROLLED STEEL ANGLE WASHERS AND HEAD LOCKS. MANG. HOLES 1/4" LARGER THAN FROG BOLT DIA.

PLATES- THICKNESS 1". FURNISHED ONLY WHEN SPECIFIED. FOOT GUARDS FURNISHED BY R.R.

WORKMANSHIP AND MATERIALS- A·R·E·A· SPECIFICATIONS FOR GENERAL TRACKWORK.

NOTES - ON FROG CASTING FOR 100#-112#-115#-130#-131# RAILS.
BOLT SHROUDS TO BE ELIMINATED. CROSS RIBS BETWEEN THE SIDE WALLS TO BE S-SHAPED. CROSS RIBS TO BE ATTACHED TO SIDE WALLS ONLY AND TO BE PLACED APPROXIMATELY EVERY SECOND BOLT SPACING AND OCCUR BETWEEN BOLT HOLES. I BEAM DESIGN TO BE USED IN HEEL EXTENSION.

BOSTON AND MAINE R.R.

STANDARD
Nº 10 RAIL BOUND MANGANESE STEEL FROG

A·R·E·A· DESIGN MARCH 1937.

APPROVED

ENGINEER M. OF W.

CHIEF ENGINEER

F 10

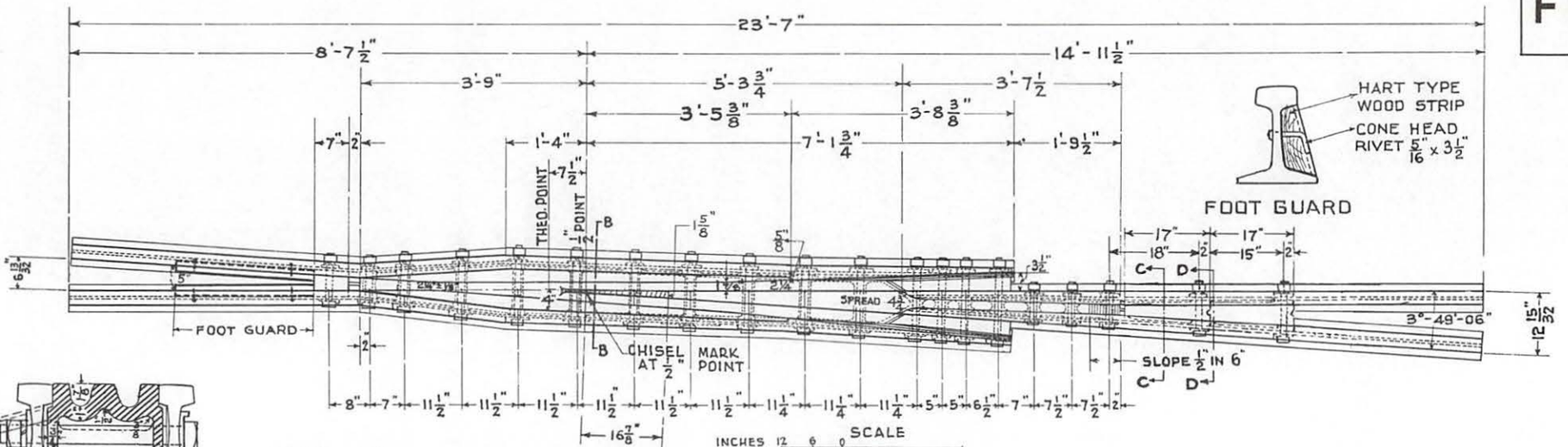
PLAN	
DRAWN	H·A·R
CHECKED	
CORRECT	

ISSUE	DATE
A	2-25-29
B	9-20-29
C	10-22-31
D	2-3-36
E	11-1-37
F	2-1-39
G	3-17-43
H	12-15-47

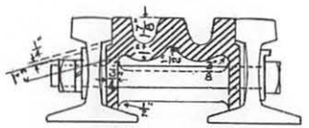
B PLATES ADDED.
C WHEEL RISERS.
D FLANGEWAY 1¾" TO 1⅞". FROG LENGTH 22'6" TO 23'7". TIE SPACING. 112# & 131# RAIL A.R.E.A. DESIGN MANGANESE CASTING CHANGE
E - MANGANESE
F - APPROVAL DATE
G - MAKE PLATES 1" THICK
H - 115# RAIL ADDED. WHEEL RISERS REMOVED
I - 7-16-48. TIES RENUMBERED.

ISSUE	DATE
I	7-16-48
J	1-23-53

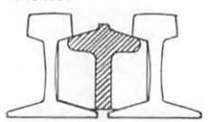
J - DEPRESSED FROG POINT 3/16"



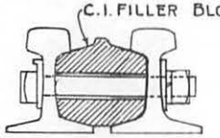
NOTE:- ACTUAL FROG POINT TO BE 3/16" BELOW WING LEVEL; SLOPING TO ZERO AT 1⅝" WIDTH OF POINT (TOP SLOPE 3/16" IN 16⅞")



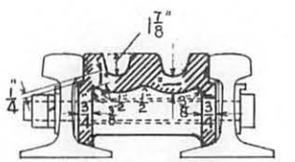
SECTION B-B
FOR 100 LB. & HEAVIER RAILS



SECTION C-C

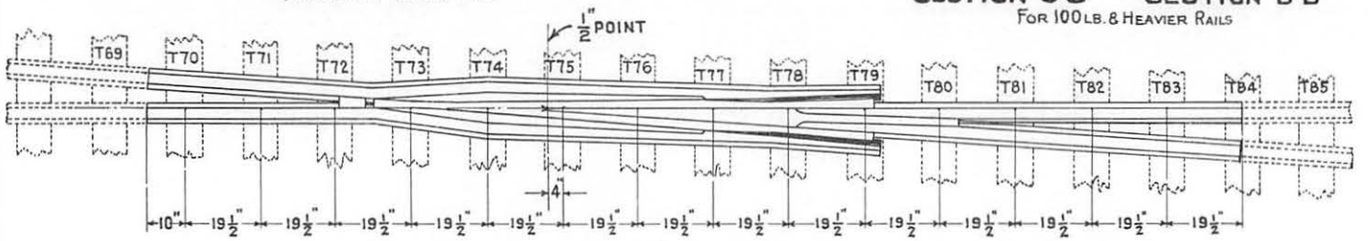


SECTION D-D
FOR 100 LB. & HEAVIER RAILS



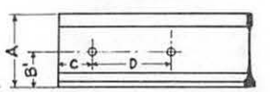
SECTION B-B
FOR 85 LB. RAIL

SEE TIE NUMBERING ON STANDARD PLAN A-15



TIE SPACING

SCALE INCHES 12 6 0
0 1 2 3 FEET



RAIL DRILLING FOR JOINTS					DIAM. OF	BOLTS DIAM. OVER THREADS	
WEIGHT	A	B'	C	D	HOLE	JOINT	FROG
85#	5 3/16"	2 17/64"	2 15/16"	6"	1 3/32"	15/16"	1 1/8"
100#	6"	2 39/64"	2 7/16"	7"	1 7/32"	1 1/16"	1 1/4"
112#	6 5/8"	2 7/8"	2½"	6½"	1 1/4"	1 1/8"	1 3/8"
130#	6 3/4"	3 1/16"	2 13/32"	5½"	1 1/4"	1 1/8"	1 3/8"
131#	7 1/8"	3 3/32"	2½"	6½"	1 1/4"	1 1/8"	1 3/8"
115#	6 5/8"	2 7/8"	3½"	6"	1 1/4"	1 1/8"	1 3/8"

NOTES:- MEASUREMENTS AS SHOWN.

DESIGN, DETAILS AND CONSTRUCTION SHALL CONFORM TO THE PLANS ADOPTED BY THE AMERICAN RAILWAY ENGINEERING ASSOCIATION AS RECOMMENDED PRACTICE.

REFERENCES TO A·R·E·A· TRACKWORK PLANS:-
#600 - DATA AND SECTIONS. #600-B - FROG POINT AND FLANGWAYS.
#610 - GENERAL PLANS. NOTE - NO. 3.

FROG BOLTS - A·R·E·A. SPECIFICATIONS 1936 FOR HIGH TENSILE STRENGTH, QUENCHED CARBON BOLTS WITH SQUARE HEADS, EXTRA HEAVY SQUARE NUTS, NUT LOCKS, ROLLED STEEL ANGLE WASHERS AND HEAD LOCKS. MANG. HOLES ¼" LARGER THAN FROG BOLT DIA.

PLATES - THICKNESS 1". FURNISHED ONLY WHEN SPECIFIED. FOOT GUARDS FURNISHED BY R.R.

WORKMANSHIP AND MATERIALS - A·R·E·A· SPECIFICATIONS FOR GENERAL TRACKWORK.

NOTES - ON FROG CASTING FOR 100#-112#-115#-130#-131# RAILS.
BOLT SHROUDS TO BE ELIMINATED. CROSS RIBS BETWEEN THE SIDE WALLS TO BE S-SHAPED. CROSS RIBS TO BE ATTACHED TO SIDE WALLS ONLY AND TO BE PLACED APPROXIMATELY EVERY SECOND BOLT SPACING AND OCCUR BETWEEN BOLT HOLES.
I BEAM DESIGN TO BE USED IN HEEL EXTENSION.

BOSTON AND MAINE R.R.

STANDARD
Nº 15 RAIL BOUND MANGANESE STEEL FROG

A.R.E.A. DESIGN - MARCH 1937.

APPROVED

H. J. Fifield
ENGINEER M. OF W.

S. G. Phillips
CHIEF ENGINEER

F 11

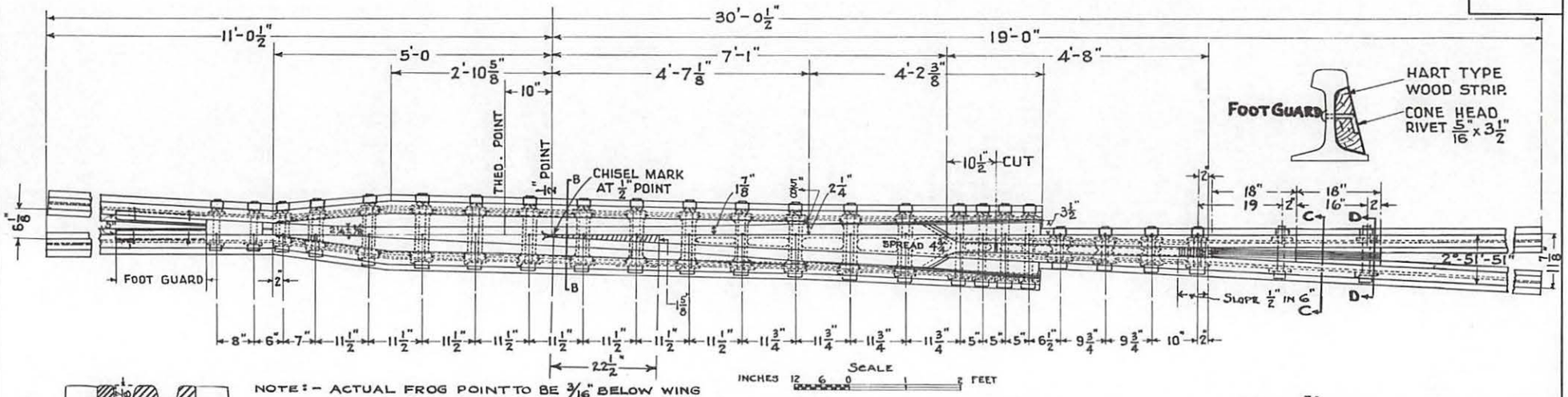
PLAN	
DRAWN	J.A.R.
CHECKED	
CORRECT	

ISSUE	DATE
A	2-25-29
B	9-20-29
C	10-22-31
D	2-3-36
E	11-1-37
F	2-1-39
G	3-17-43
H	12-15-47

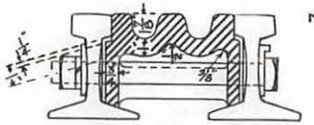
B - PLATES ADDED. WHEEL RISERS.
C
D - FLANGEWAY 1¾" TO 1⅞". FROG LENGTH 29'0" TO 30'0½". TIE SPACING. 112#&131# RAIL AREA DESIGN.
E - MANGANESE CASTING CHANGE
F - APPROVAL DATE
G - MAKE PLATES 1" THICK
H - 115# RAIL ADDED & WHEEL RISER REMOVED.
I - 7-16-48. TIES RENUMBERED.

ISSUE	DATE
I	7-16-48
J	1-23-53

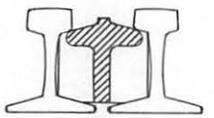
J - DEPRESSED FROG POINT 3/16"



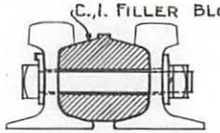
NOTE:- ACTUAL FROG POINT TO BE 3/16" BELOW WING LEVEL; SLOPING TO ZERO AT 1⅝" WIDTH OF POINT (TOP SLOPE 3/16" IN 22½")



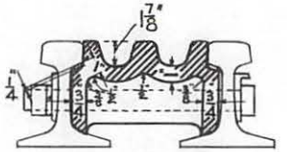
SECTION B-B
FOR 100 LB. AND HEAVIER RAILS



SECTION C-C

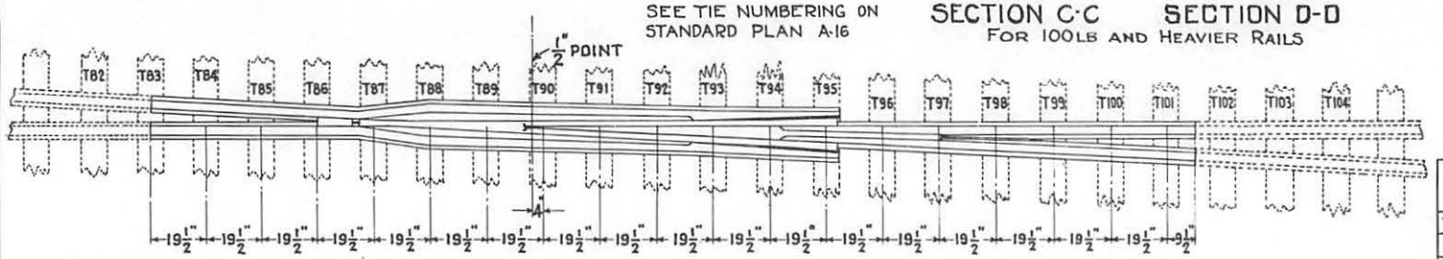


SECTION D-D
FOR 100 LB AND HEAVIER RAILS



SECTION B-B
FOR 85 LB. RAIL

SEE TIE NUMBERING ON STANDARD PLAN A-16



TIE SPACING

SCALE
INCHES 12 6 0 0 1 2 3 4 FEET

RAIL DRILLING FOR JOINTS					DIAM. OF HOLE	BOLTS DIAM. OVER THREADS	
WEIGHT	A	B'	C	D		JOINT	FROG
85#	5 3/16"	2 17/64"	2 15/16"	6"	1 3/32"	15/16"	1⅛"
100#	6"	2 33/64"	2 7/16"	7"	1 7/32"	1 1/16"	1¼"
112#	6 5/8"	2⅞"	2½"	6½"	1¼"	1⅛"	1⅜"
130#	6¾"	3 1/16"	2 13/32"	5½"	1¼"	1⅛"	1⅜"
131#	7⅛"	3 3/32"	2½"	6½"	1¼"	1⅛"	1⅜"
115#	6 5/8"	2⅞"	3½"	6"	1¼"	1⅛"	1⅜"

NOTES

DESIGN, DETAILS, AND CONSTRUCTION SHALL CONFORM TO THE PLANS ADOPTED BY THE AMERICAN RAILWAY ENGINEERING ASSOCIATION AS RECOMMENDED PRACTICE.

REFERENCES TO A·R·E·A· TRACKWORK PLANS:-
#600 - DATA AND SECTIONS.
#600-B - FROG POINT AND FLANGEWAYS.
#606-7 - GENERAL PLAN. NOTE - NO. 3.

FROG BOLTS - A.R.E.A. SPECIFICATIONS 1936 FOR HIGH TENSILE STRENGTH, QUENCHED CARBON BOLTS WITH SQUARE HEADS, EXTRA HEAVY SQUARE NUTS, NUT LOCKS, ROLLED STEEL ANGLE WASHERS AND HEAD LOCKS. MANG. HOLES ¼" LARGER THAN FROG BOLT DIA.

PLATES - THICKNESS 1". FURNISHED ONLY WHEN SPECIFIED. FOOT GUARDS FURNISHED BY R.R.

WORKMANSHIP AND MATERIALS - A·R·E·A· SPECIFICATIONS FOR GENERAL TRACKWORK.

NOTES - ON FROG CASTING FOR 100#-112#-115#-130#-131# RAILS.
BOLT SHROUDS TO BE ELIMINATED. CROSS RIBS BETWEEN THE SIDE WALLS TO BE S-SHAPED. CROSS RIBS TO BE ATTACHED TO SIDE WALLS ONLY AND TO BE PLACED APPROXIMATELY EVERY SECOND BOLT SPACING AND OCCUR BETWEEN BOLT HOLES.

BOSTON AND MAINE R. R.

STANDARD
Nº 20 RAIL BOUND
MANGANESE STEEL FROG

A.R.E.A. DESIGN - MARCH 1937

APPROVED.

H.J. Fifield
ENGINEER M. OF W.

S.J. Phillips
CHIEF ENGINEER.

F 12

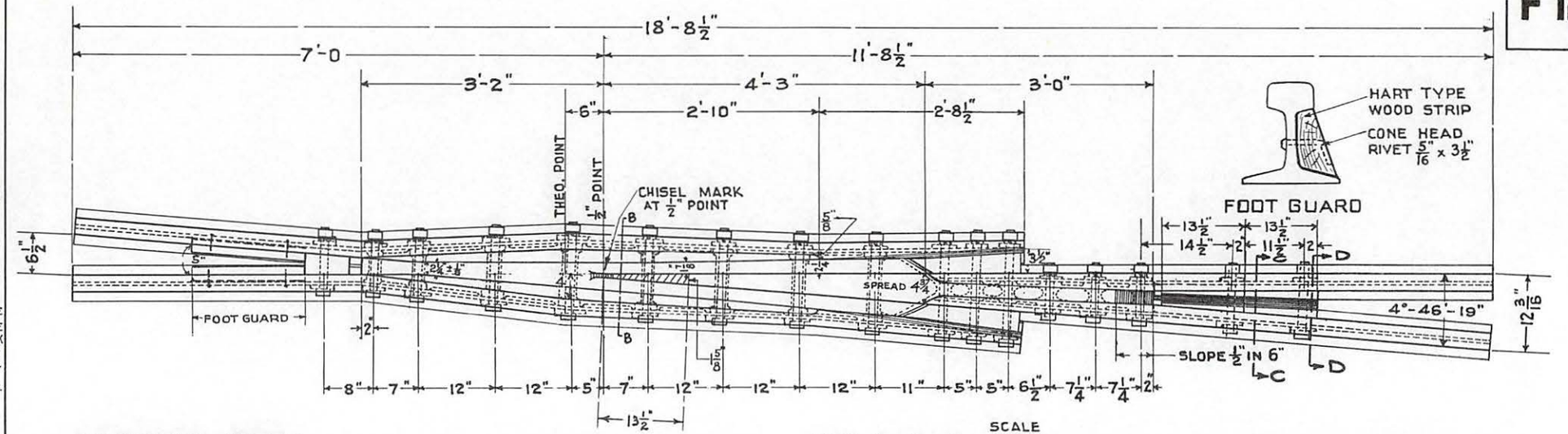
PLAN	
DRAWN	H.A.R.
CHECKED	
CORRECT	

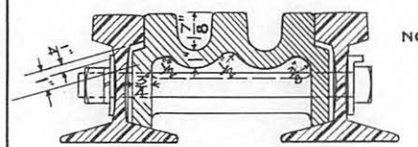
ISSUE	DATE
A	8-14-29
B	9-20-29
C	10-22-31
D	2-3-36
E	11-1-37
F	2-1-39
G	3-17-43
H	12-15-47

B PLATES ADDED. WHEEL RISERS.
C FLANGEWAY 1¾" TO 1⅞"
D FROG LENGTH 18'6" TO 18'8½" TIE SPACING 112# & 131# RAIL A.R.E.A. DESIGN E-MANGANESE CASTING CHANGE
F-APPROVAL DATE
G-MAKE PLATES 1" THICK
H-115# RAIL ADDED & WHEEL RISER REMOVED.
I-7-15-48. TIES RENUMBERED.

ISSUE	DATE
I	7-15-48
J	1-23-53

J-DEPRESSED FROG POINT 3/16"

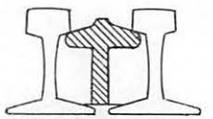




SECTION B-B
FOR 100 LB AND HEAVIER RAILS

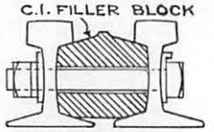
NOTE :- ACTUAL FROG POINT TO BE 3/16" BELOW WING LEVEL; SLOPING TO ZERO AT 1⅝" WIDTH OF POINT (TOP SLOPE 3/16" IN 13½")

SCALE
INCHES 12 6 0
0 1 2 FEET

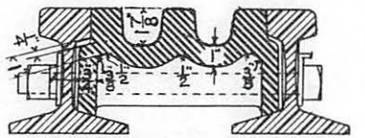


C.I. FILLER BLOCK

SECTION C-C

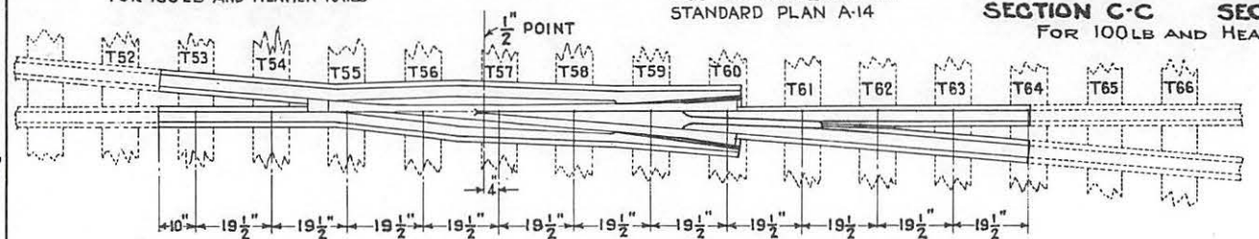


SECTION D-D
FOR 100 LB AND HEAVIER RAILS



SECTION B-B
FOR 85 LB RAIL

SEE TIE NUMBERING ON STANDARD PLAN A-14



TIE SPACING

SCALE
INCHES 12 6 0
0 1 2 3 FEET

RAIL DRILLING FOR JOINTS					DIAM OF JOINT	BOLTS DIAM. OVER THREADS	
WEIGHT	A	B'	C	D	HOLE	JOINT	FROG
85#	5 3/16"	2 17/64"	2 15/16"	6"	1 3/32"	15/16"	1⅛"
100#	6"	2 33/64"	2 7/16"	7"	1 7/32"	1 1/16"	1¼"
112#	6 5/8"	2⅞"	2½"	6½"	1¼"	1⅛"	1⅜"
130#	6¾"	3 1/16"	2 13/32"	5½"	1¼"	1⅛"	1⅜"
131#	7⅛"	3 3/32"	2½"	6½"	1¼"	1⅛"	1⅜"
115#	6 5/8"	2⅞"	3½"	6"	1¼"	1⅛"	1⅜"

NOTES:-

DESIGN, DETAILS AND CONSTRUCTION SHALL CONFORM TO THE PLANS ADOPTED BY THE AMERICAN RAILWAY ENGINEERING ASSOCIATION AS RECOMMENDED PRACTICE.

REFERENCES TO A·R·E·A· TRACKWORK PLANS.—
#600 — DATA AND SECTIONS. #600-B — FROG POINT AND FLANGEWAYS.
#609 — GENERAL PLAN. NOTE-NO. 3.

FROG BOLTS - A R E A. SPECIFICATIONS 1936 FOR HIGH TENSILE STRENGTH, QUENCHED CARBON BOLTS WITH SQUARE HEADS, EXTRA HEAVY SQUARE NUTS, NUT LOCKS, ROLLED STEEL ANGLE WASHERS AND HEAD LOCKS. MANG. HOLES ¼" LARGER THAN FROG BOLT DIA.

PLATES - THICKNESS 1". FURNISHED ONLY WHEN SPECIFIED. FOOT GUARDS FURNISHED BY R.R.

WORKMANSHIP AND MATERIALS A·R·E·A· SPECIFICATIONS FOR GENERAL TRACKWORK.

NOTES ON FROG CASTING FOR 100#-112#-115#-130#-131# RAILS.
BOLT SHROUDS TO BE ELIMINATED. CROSS RIBS BETWEEN THE SIDE WALLS TO BE S-SHAPED. CROSS RIBS TO BE ATTACHED TO SIDE WALLS ONLY, AND TO BE PLACED APPROXIMATELY EVERY SECOND BOLT SPACING AND OCCUR BETWEEN BOLT HOLES.

BOSTON AND MAINE R.R.

Nº 12 RAIL BOUND MANGANESE STEEL FROG

A·R·E·A· DESIGN - MARCH 1937.

APPROVED

H. F. Fuller
ENGINEER M. OF W.

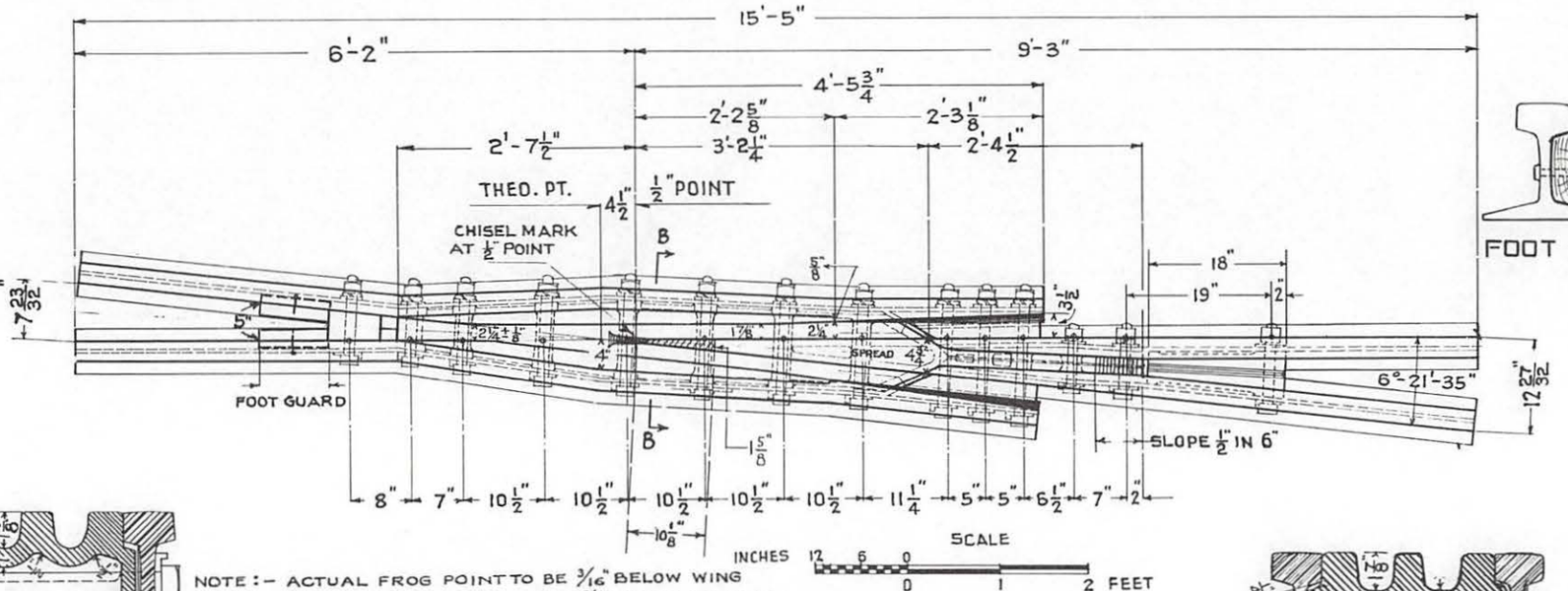
S. J. Phillips
CHIEF ENGINEER

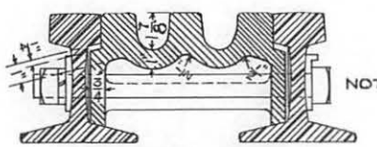
F13

PLAN	
DRAWN	J.L.B.
CHECKED	H.A.R.
CORRECT	J.J.R.

ISSUE	DATE
A	2-3-36
B	11-1-37
C	2-1-39
D	3-17-43
E	12-15-47
F	7-15-48
G	1-23-53

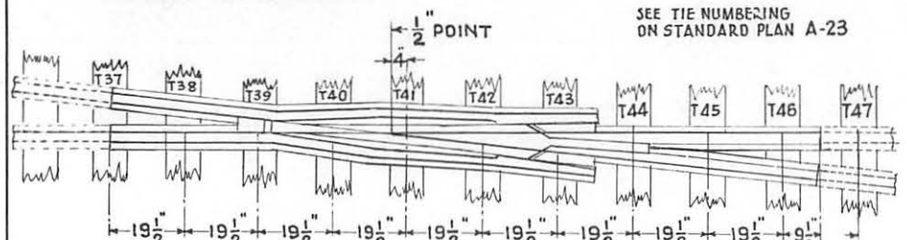
B MANGANESE CASTING CHANGE
C-APPROVAL DATE
D- MAKE PLATES 1" THICK
E- 115# RAIL ADDED & WHEEL RISER REMOVED.
F- TIES RENUMBERED
G- DEPRESSED FROG POINT 3/16"





SECTION B-B
FOR 100 LB AND HEAVIER RAILS

NOTE :- ACTUAL FROG POINT TO BE 3/16" BELOW WING LEVEL; SLOPING TO ZERO AT 1 5/8" WIDTH OF POINT (TOP SLOPE 3/16" IN 10 1/8")

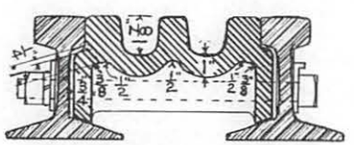


TIE SPACING

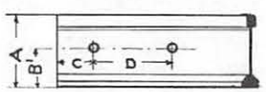
SCALE
INCHES 12 6 0
0 1 2 3 FEET

HART TYPE WOOD STRIP
CONE HEAD RIVET 5/16" x 3 1/2"

FOOT GUARD



SECTION B B
FOR 85 LB RAIL



RAIL DRILLING FOR JOINTS					DIAM OF JOINT	BOLTS DIAM OVER THREADS	
WEIGHT	A	B'	C	D	HOLE	JOINT	FROG
85#	5 3/16"	2 17/64"	2 15/16"	6"	1 3/32"	15/16"	1 1/8"
100#	6"	2 39/64"	2 7/16"	7"	1 7/32"	1 1/16"	1 1/4"
112#	6 5/8"	2 7/8"	2 1/2"	6 1/2"	1 1/4"	1 1/8"	1 3/8"
130#	6 3/4"	3 1/16"	2 13/32"	5 1/2"	1 1/4"	1 1/8"	1 3/8"
131#	7 1/8"	3 3/32"	2 1/2"	6 1/2"	1 1/4"	1 1/8"	1 3/8"
115#	6 5/8"	2 7/8"	3 1/2"	6"	1 1/4"	1 1/8"	1 3/8"

NOTES:-

DESIGN, DETAILS AND CONSTRUCTION SHALL CONFORM TO THE PLANS ADOPTED BY THE AMERICAN RAILWAY ENGINEERING ASSOCIATION AS RECOMMENDED PRACTICE.

REFERENCES TO A.R.E.A. TRACKWORK PLANS
#600 - DATA AND SECTIONS. #600-B- FROG POINT AND FLANGEWAYS.
#609- GENERAL PLAN. NOTE NO. 3.

FROG BOLTS- A.R.E.A. SPECIFICATIONS 1936 FOR HIGH TENSILE STRENGTH, QUENCHED CARBON BOLTS WITH SQUARE HEADS, EXTRA HEAVY SQUARE NUTS, NUT LOCKS, ROLLED STEEL ANGLE WASHERS AND HEAD LOCKS. MANG. HOLES 1/4" LARGER THAN FROG BOLT DIA.

PLATES- THICKNESS 1", FURNISHED ONLY WHEN SPECIFIED. FOOT GUARDS FURNISHED BY R.R.

WORKMANSHIP AND MATERIALS- A.R.E.A. SPECIFICATIONS FOR GENERAL TRACKWORK.

NOTES:- ON FROG CASTING FOR 100# 112# 115# 130# 131# RAILS.
BOLT SHROUDS TO BE ELIMINATED. CROSS RIBS BETWEEN THE SIDE WALLS TO BE S-SHAPED. CROSS RIBS TO BE ATTACHED TO SIDE WALLS ONLY, AND TO BE PLACED APPROXIMATELY EVERY SECOND BOLT SPACING AND OCCUR BETWEEN BOLT HOLES.
I BEAM DESIGN TO BE USED IN HEEL EXTENSION.

BOSTON AND MAINE R.R.

No. 9 RAIL BOUND MANGANESE STEEL FROG

A.R.E.A. DESIGN - MARCH 1937.

APPROVED

H. J. Tyrrell
ENGINEER M. OF W.

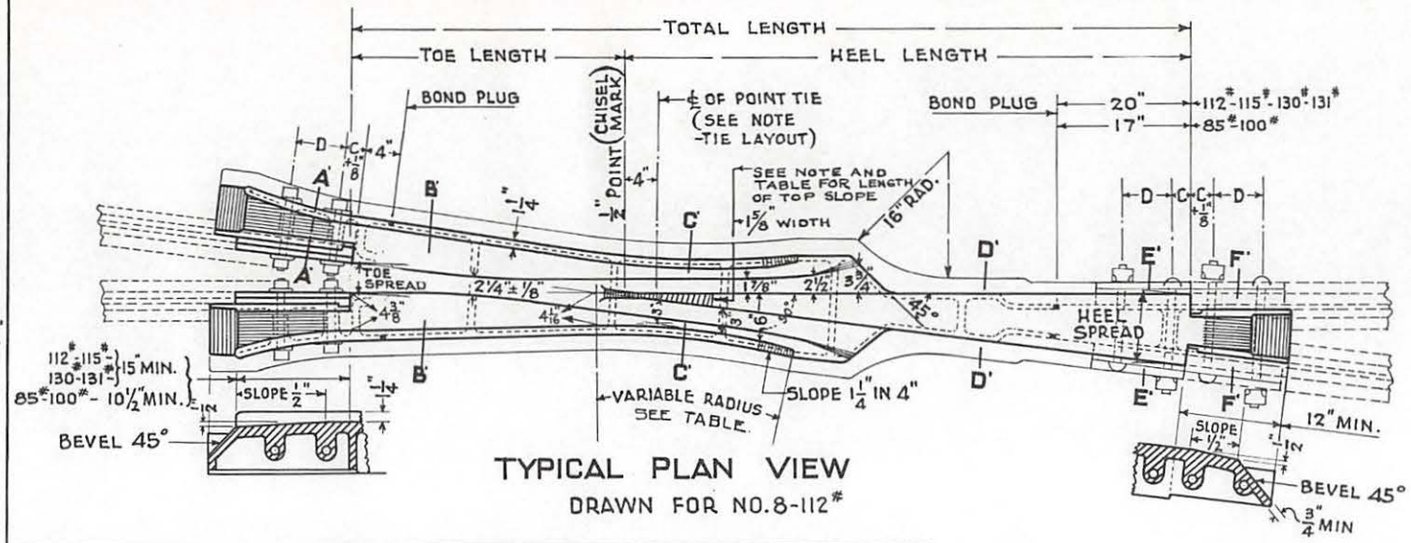
S. G. Phillips
CHIEF ENGINEER

F 14

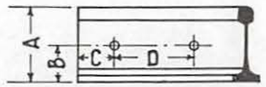
PLAN	
DRAWN	H.A.P.
CHECKED	J.L.B.
CORRECT	J.J.R.

ISSUE	DATE
A	8-14-29
B	10-26-36
C	12-15-47
D	1-23-53

B SUPERSEDES F14-F15-F16 F17-F18.
C=115# RAIL ADDED.
D=DEPRESSED FROG POINT 3/16"



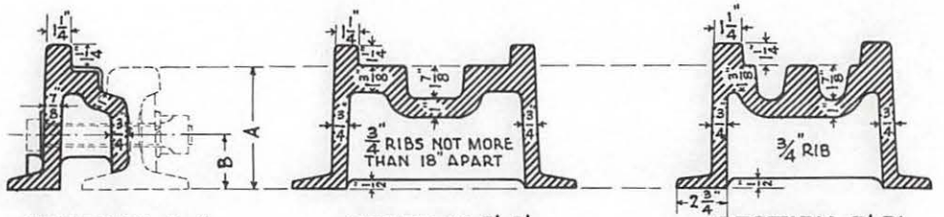
TYPICAL PLAN VIEW
DRAWN FOR NO.8-112#



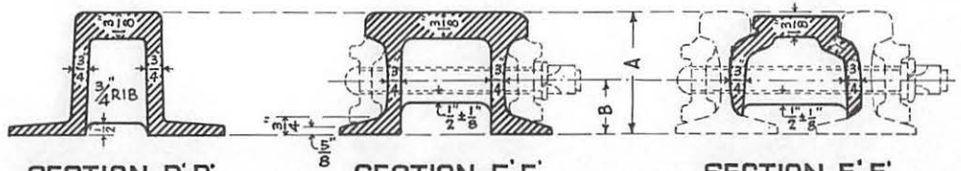
RAIL DRILLING FOR JOINTS					DIAM. OF HOLE	JOINT BOLT DIAM. OVER THRDS
WEIGHT	A	B	C	D		
85#	5 3/16"	2 17/64"	2 15/16"	6"	1 3/32"	15/16"
100#	6"	2 39/64"	2 7/16"	7"	1 7/32"	1 1/16"
112#	6 5/8"	2 7/8"	2 1/2"	6 1/2"	1 1/4"	1 1/8"
130#	6 3/4"	3 1/16"	2 13/32"	5 1/2"	1 1/4"	1 1/8"
131#	7 1/8"	3 3/32"	2 1/2"	6 1/2"	1 1/4"	1 1/8"
115#	6 5/8"	2 7/8"	3 1/2"	6"	1 1/4"	1 1/8"

FROG LENGTHS

FROG		85# RAIL						100# RAIL						112#, 115#, 130#, 131# RAILS					
NO.	ANGLE	TOTAL L'GTH	TOE L'GTH	TOE SPR'D	HEEL L'GTH	HEEL SPR'D	VAR. RAD.	TOTAL L'GTH	TOE L'GTH	TOE SPR'D	HEEL L'GTH	HEEL SPR'D	VAR. RAD.	TOTAL L'GTH	TOE L'GTH	TOE SPR'D	HEEL L'GTH	HEEL SPR'D	VAR. RAD.
6	9°-31'-38"	5'-5"	20"	2 13/16"	3'-9"	8"	4'-9"	5'-8"	21"	3"	3'-11"	8 5/16"	4'-10"	7'-4"	2'-11"	5 5/16"	4'-5"	9 5/16"	5'-0"
7	8°-10'-16"	6'-3"	23"	2 25/32"	4'-4"	7 15/16"	6'-8"	6'-7"	2'-0"	2 15/16"	4'-7"	8 3/8"	6'-8"	8'-1 1/2"	2'-11"	4 1/2"	5'-2 1/2"	9 13/32"	7'-0"
8	7°-09'-10"	7'-3"	2'-3"	2 7/8"	5'-0"	8"	8'-9"	7'-7"	2'-4"	3"	5'-3"	8 3/8"	8'-10"	8'-11"	2'-11"	3 7/8"	6'-0"	9 1/2"	9'-2"
9	6°-21'-35"	8'-1"	2'-6"	2 13/16"	5'-7"	7 15/16"	11'-2"	8'-5"	2'-7"	2 15/16"	5'-10"	8 1/4"	11'-3"	9'-9"	2'-11"	3 7/8"	6'-10"	9 19/32"	11'-6"
10	5°-43'-29"	8'-11"	2'-9"	2 13/16"	6'-2"	7 7/8"	13'-11"	9'-4"	2'-10"	2 29/32"	6'-6"	8 5/16"	14'-0"	11'-4 1/2"	3'-9"	4"	7'-7 1/2"	9 5/8"	14'-8"



SECTION A'-A' SECTION B'-B' SECTION C'-C'



SECTION D'-D' SECTION E'-E' SECTION F'-F'

NOTES:

DESIGN, DETAILS AND CONSTRUCTION SHALL CONFORM TO THE PLANS ADOPTED BY THE AMERICAN RAILWAY ENGINEERING ASSOCIATION AS RECOMMENDED PRACTISE.

REFERENCES TO A.R.E.A. TRACKWORK PLANS:— #640 - DATA AND SECTIONS. #600 B - FROG POINT AND FLANGEWAY.

BOLTS - FURNISHED WITH FROG. A.S.T.M. SPECIFICATION A50 FOR HIGH TENSION CARBON BOLTS, EXTRA HEAVY SQUARE NUTS, NUT LOCKS, ROLLED STEEL ANGLE WASHERS AND HEAD LOCKS.

BOLT HOLES - DIAMETER OF HOLES IN CASTINGS TO BE 1/4" LARGER THAN DIAMETER OF BOLTS.

BOND PLUGS - INSERTS OF 3/4" SOFT STEEL IN VERTICAL WALLS. TO BE DRILLED WITH 3/8" HOLES AND PLUGGED TIGHTLY AT ONCE WITH LEAD RIVETS.

JOINT BARS - AT TOE TO BE FURNISHED WITH FROG. AT HEEL TO BE FURNISHED BY RAILROAD.

PLATES - FURNISHED ONLY WHEN SPECIALLY ORDERED.

MARKING - FROGS TO BE MARKED WITH NUMBER-WEIGHT OF RAIL AND MANUFACTURER'S NAME.

WORKMANSHIP AND MATERIAL - A.R.E.A. SPECIFICATIONS FOR GENERAL TRACKWORK.

TIE LAYOUTS FOR ALL SOLID MANG. SELF GUARDED FROGS - CENTER LINE OF POINT TIE IS 4" FROM THE 1/2 POINT - TOWARDS HEEL OF FROG. ALL OTHER TIES ARE SPACED 19 1/2" CENTER TO CENTER FROM THIS TIE.

NOTE:— ACTUAL FROG POINT TO BE 3/16" BELOW WING LEVEL; SLOPING TO ZERO AT 1 5/8" WIDTH OF POINT.

FROG NO.	TOP SLOPE LENGTH
6	6 13/16"
7	7 7/8"
8	9"
9	10 1/8"
10	11 1/4"

BOSTON AND MAINE R.R.

STANDARD
SOLID MANGANESE STEEL SELF GUARDED FROGS

A.R.E.A. DESIGN — MARCH - 1934.

APPROVED:

H. F. Fifield
ENGINEER M. OF W.

S. P. Phillips
CHIEF ENGINEER

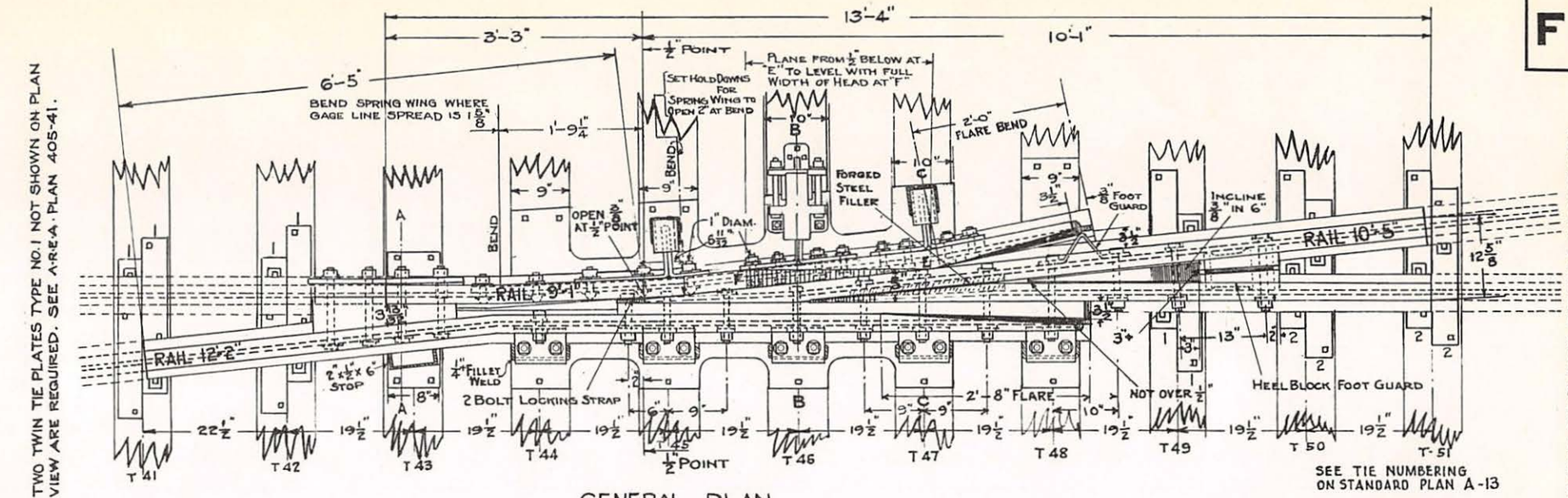
PLAN	
DRAWN BY	GWH.
CHECKED	JMH.
CORRECT	J.P.C.

ISSUE	DATE
B	3-14-42
C	3-17-43
D	12-15-47
E	4-15-49

B - REDRAWN IN ADOPTING A·R·E·A DESIGN 405-41.
C - MAKE PLATES 1" THICK
D - 115# RAIL ADDED.
E - TIES RENUMBERED { HOLD DOWNS CHANGED

F 16

TWO TWIN TIE PLATES TYPE NO.1 NOT SHOWN ON PLAN VIEW ARE REQUIRED. SEE A·R·E·A. PLAN 405-41.

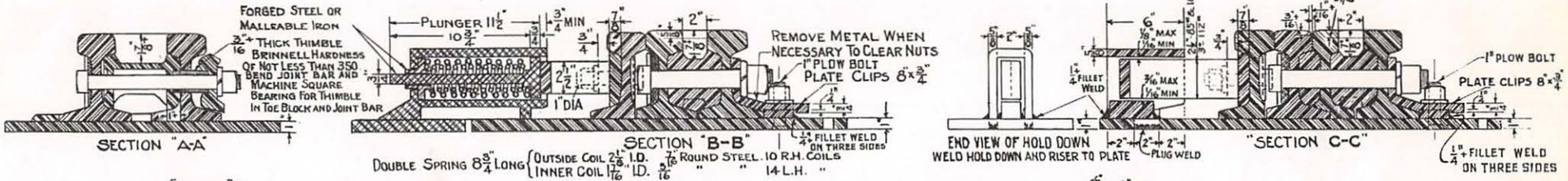


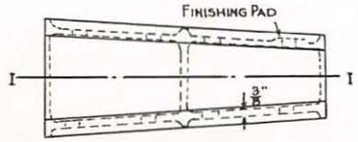
SEE TIE NUMBERING ON STANDARD PLAN A-13

TWO TWIN TIE PLATES TYPE NO. 2 NOT SHOWN ON PLAN VIEW ARE REQUIRED FOR 85# AND 100# RAIL; FOUR REQUIRED FOR 112# & 115# RAIL. SEE A·R·E·A·PLAN 405-41.

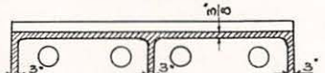
GENERAL PLAN

PLAN SHOWS L.H. FROG

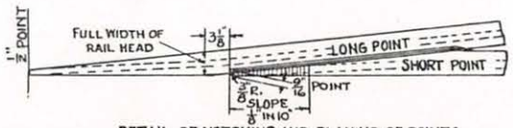

FORGED STEEL OR MALLEABLE IRON
13/16" THICK THIMBLE BRINNELL HARDNESS OF NOT LESS THAN 350 BEND JOINT BAR AND MACHINE SQUARE BEARING FOR THIMBLE IN TOE BLOCK AND JOINT BAR
SECTION "A-A"
PLUNGER 11½"
10¾"
¾" MIN
⅞"
2"
2½"
1" DIA
REMOVE METAL WHEN NECESSARY TO CLEAR NUTS
1" PLOW BOLT
PLATE CLIPS 8"x¾"
¼" FILLET WELD ON THREE SIDES
SECTION "B-B"
DOUBLE SPRING 8¾" LONG { OUTSIDE COIL 2⅜" I.D. ⅞" ROUND STEEL. 10 R.H. COILS
INNER COIL 1⅞" I.D. 5/16" " " 14 L.H. "
6" MAX
1/16" MIN
¼" FILLET WELD
1" PLOW BOLT
PLATE CLIPS 8"x¾"
END VIEW OF HOLD DOWN WELD HOLD DOWN AND RISER TO PLATE
2" 2" 2"
PLUG WELD
"SECTION C-C"
1¼" FILLET WELD ON THREE SIDES



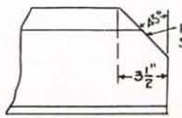
CAST STEEL TOE BLOCK "CLASS B-HARD"



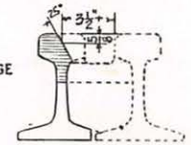
SECTION "1-1"



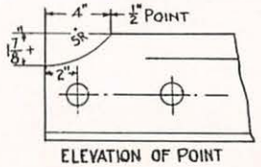
DETAIL OF NOTCHING AND PLANING OF POINTS



SIDE VIEW OF BEVELED WING RAIL

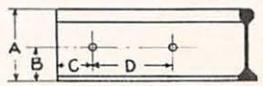


END VIEW OF WING RAILS



ELEVATION OF POINT

RAIL FOR	DRILLING FOR JOINTS				DIAM. OF JOINT HOLE	BOLTS DIAM OVER THREADS	
WEIGHT	A	B	C	D		JOINT	FROG
112#	6 5/8"	2 7/8"	2½"	6½"	1½"	1⅜"	1⅜"
115#	6 5/8"	2⅞"	3½"	6"	1¼"	1⅛"	1⅜"



REFERENCE DRAWINGS
112# RAIL - STANDARD H4
115# RAIL - STANDARD H6

NOTES.—
DESIGN AND CONSTRUCTION NOT OTHERWISE SHOWN ON PLAN SHALL CONFORM TO THE PLANS ADOPTED BY THE AMERICAN RAILWAY ENGINEERING ASSOCIATION AS RECOMMENDED PRACTICE. REFERENCE TO A·R·E·A TRACKWORK PLANS' NO. 405-41.
FROG BOLTS-A·S·T·M. SPECIFICATIONS A50 FOR HIGH TENSILE STRENGTH, QUENCHED CARBON BOLTS WITH SQUARE HEADS, EXTRA HEAVY SQUARE NUTS, NUT LOCKS, ROLLED STEEL ANGLE WASHERS AND HEAD LOCKS. WORKMANSHIP AND MATERIALS A·R·E·A· SPECIFICATIONS FOR GENERAL TRACKWORK.
WHEN ORDERING FROGS SPECIFY RIGHT HAND OR LEFT HAND, SECTION OF RAIL, WITH OR WITHOUT OIL BUFFER.

BOSTON AND MAINE R.R.

STANDARD

NO. 10 SPRING RAIL FROG

FOR 112 LB RAIL
AND 115 LB RAIL

APPROVED

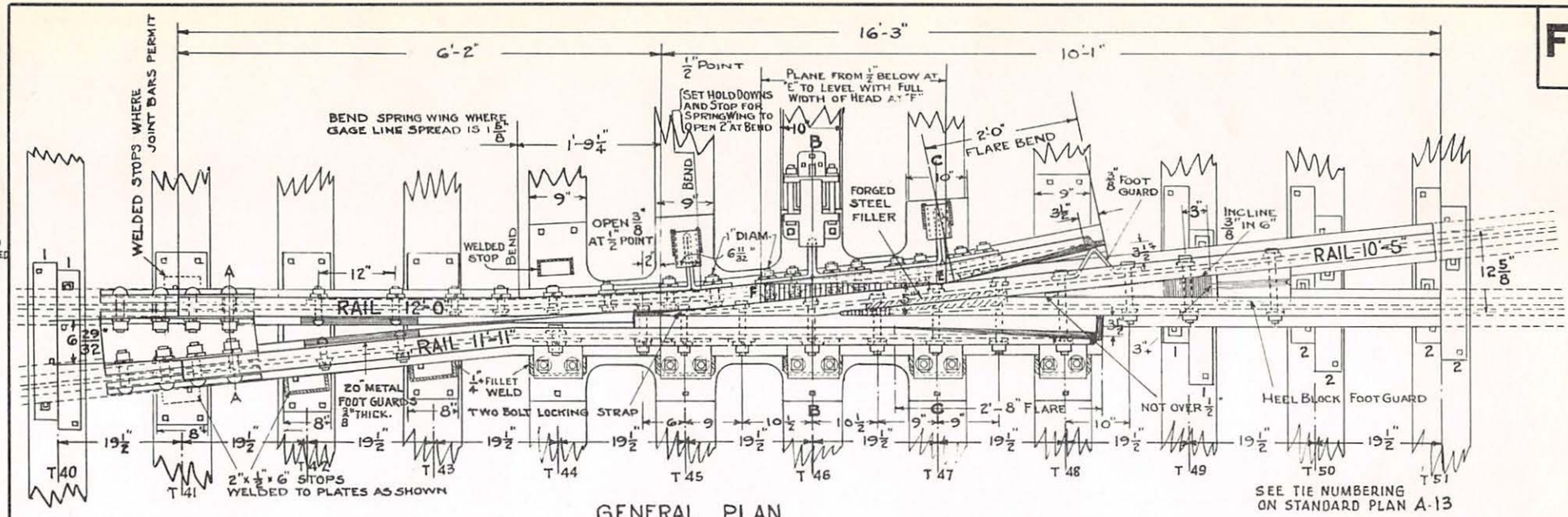
H. J. Fifield
ENGINEER M. OF W.

S. H. Philips
CHIEF ENGINEER

PLAN	
DRAWN BY	Elw.H.
CHECKED	J.M.H.
CORRECT	J.P.C.
ISSUE	DATE
A	3-14-42
B	3-17-43
C	4-15-49

B-MAKE PLATES 1" THICK
C-TIES RENUMBERED
HOLD DOWNS CHANGED

F16 A

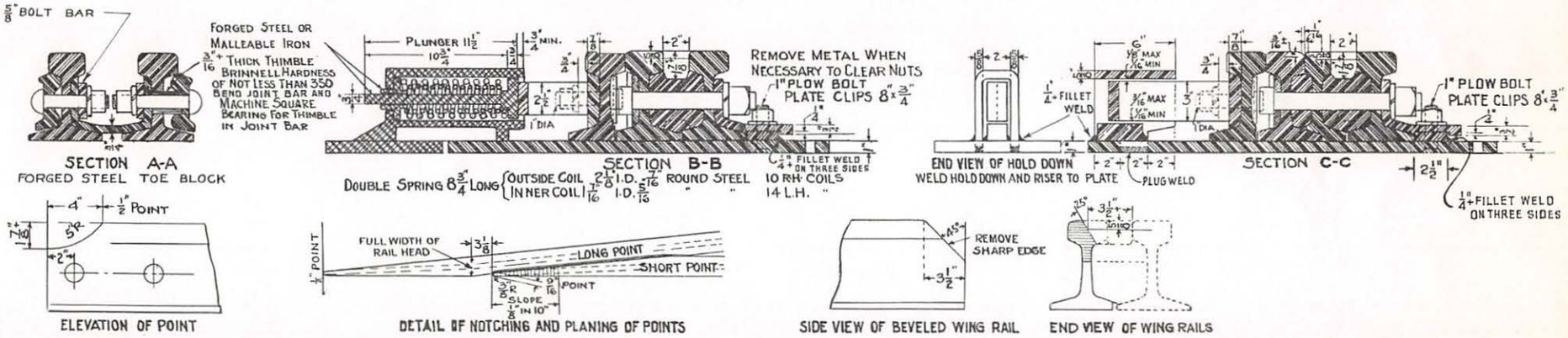


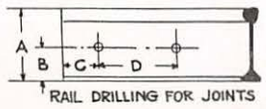
SEE TIE NUMBERING ON STANDARD PLAN A-13

FOUR TWIN TIE PLATES-TYPE NO. 2 NOT SHOWN ON PLAN VIEW TO BE FURNISHED. SEE A·R·E·A· PLAN NO. 401-41.

GENERAL PLAN

PLAN SHOWS L.H. FROG


BOLT BAR
FORGED STEEL OR MALLEABLE IRON
3/16" THICK THIMBLE BRINNELL HARDNESS OF NOT LESS THAN 350 BEND JOINT BAR AND MACHINE SQUARE BEARING FOR THIMBLE IN JOINT BAR
SECTION A-A
FORGED STEEL TOE BLOCK
PLUNGER 11 1/2"
REMOVE METAL WHEN NECESSARY TO CLEAR NUTS
1" PLOW BOLT
PLATE CLIPS 8"x3/4"
SECTION B-B
DOUBLE SPRING 8 3/4" LONG
OUTSIDE COIL 2 5/8" I.D. 7/16" ROUND STEEL 10 RH COILS
INNER COIL 1 1/16" I.D. 5/16" " " 14 L.H. "
1/4" FILLET WELD ON THREE SIDES
END VIEW OF HOLD DOWN
WELD HOLD DOWN AND RISER TO PLATE
PLUG WELD
SECTION C-C
1" PLOW BOLT PLATE CLIPS 8"x3 1/4"
1/4" FILLET WELD ON THREE SIDES
4"
1/2" POINT
5" R
2"
ELEVATION OF POINT
FULL WIDTH OF RAIL HEAD
LONG POINT
SHORT POINT
SLOPE 1/8" IN 10"
DETAIL OF NOTCHING AND PLANING OF POINTS
45°
REMOVE SHARP EDGE
SIDE VIEW OF BEVELED WING RAIL
END VIEW OF WING RAILS



RAIL DRILLING FOR JOINTS

RAIL FOR WEIGHT	DRILLING JOINTS A	B	C	D	DIAM. OF JOINT HOLE	BOLTS DIAM. OVER THREADS JOINT	FROG
130#	6 3/4"	3 1/16"	2 13/32"	5 1/2"	1 1/4"	1 1/8"	1 3/8"
131#	7 1/8"	3 3/32"	2 1/2"	6 1/2"	1 1/4"	1 1/8"	1 3/8"

NOTES.—

DESIGN AND CONSTRUCTION NOT OTHERWISE SHOWN ON PLAN SHALL CONFORM TO THE PLANS ADOPTED BY THE AMERICAN RAILWAY ENGINEERING ASSOCIATION AS RECOMMENDED PRACTICE. REFERENCE TO A·R·E·A· TRACKWORK PLANS NO. 401-41.

FROG BOLTS A·S·T·M· SPECIFICATIONS A50 FOR HIGH TENSILE STRENGTH, QUENCHED CARBON BOLTS WITH SQUARE HEADS, EXTRA HEAVY SQUARE NUTS, NUT LOCKS, ROLLED STEEL ANGLE WASHERS AND HEAD LOCKS. WORKMANSHIP AND MATERIALS A·R·E·A· SPECIFICATIONS FOR GENERAL TRACKWORK.

WHEN ORDERING FROGS SPECIFY RIGHT HAND OR LEFT HAND, SECTION OF RAIL, WITH OR WITHOUT OIL BUFFER.

BOSTON AND MAINE R.R.

STANDARD
NO. 10 SPRING RAIL FROG
FOR 130# & 131# RAIL

APPROVED

W. F. Fifield
ENGINEER M. OF W.

S. P. Phillips
CHIEF ENGINEER

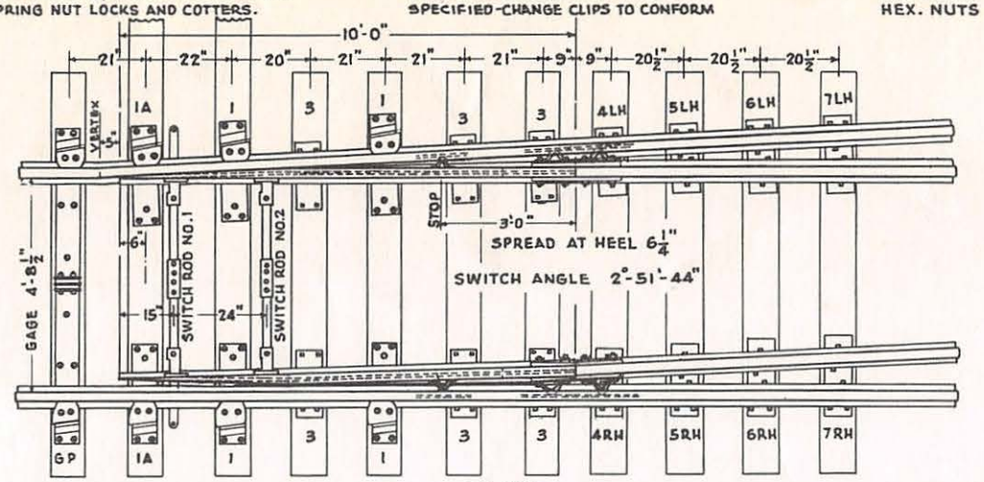
PLAN	
DRAWN BY H.L.R.	
CHECKED BY A.E.T.	
CORRECT F.W.H.	
ISSUE	DATE
A	8-10-50

CLIP BOLTS ¾" DIA.– STD. SQ. HEADS SPRING NUT LOCKS AND COTTERS.

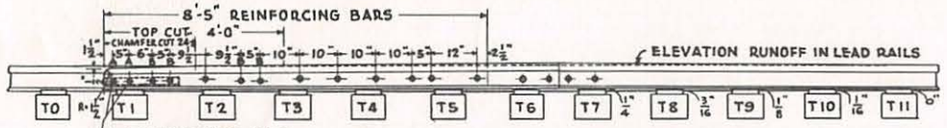
WHEN MANGANESE POINTS ARE SPECIFIED-CHANGE CLIPS TO CONFORM

ROD BOLTS 1" DIA. STD. SQ. HEADS HEX. NUTS AND COTTERS. HT. TR.

F19

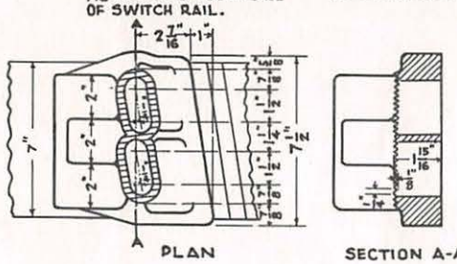


PLAN



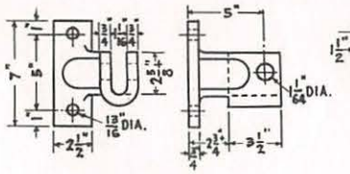
A-A-INTERLOCKING HOLES 13/16" DIA.– UP 2" ABOVE BASE OF SWITCH RAIL.

ELEVATION OF SWITCH POINT

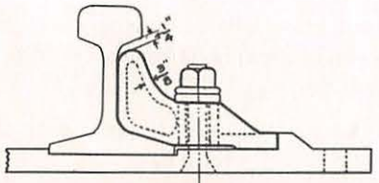


PLAN

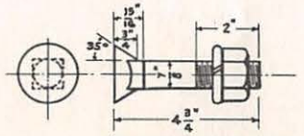
SECTION A-A



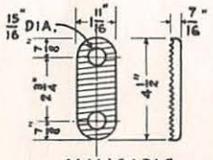
CLIP



ELEVATION

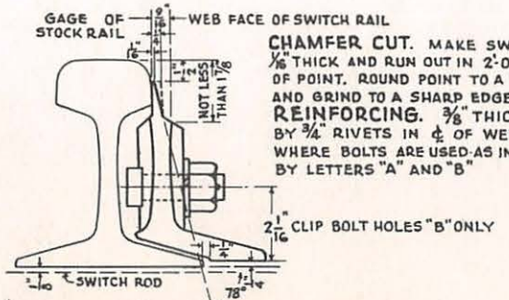


HEAT TREATED BOLT C'SK. HEAD SQ. NECK 2 REQUIRED



MALLEABLE IRON WASHER

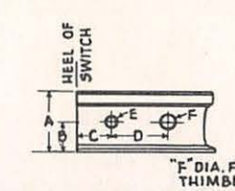
ADJUSTABLE BRACE



CHAMFER CUT. MAKE SWITCH POINT 1/16 THICK AND RUN OUT IN 2'-0" FROM END OF POINT. ROUND POINT TO A 1½" RADIUS AND GRIND TO A SHARP EDGE.

REINFORCING. ⅜" THICK SECURED BY ¾" RIVETS IN ℄ OF WEB EXCEPT WHERE BOLTS ARE USED AS INDICATED BY LETTERS "A" AND "B"

SECTION AND PLANING OF POINT



"F" DIA. FOR THIMBLE

SWITCH RAIL DRILLING							
RAIL WEIGHT	A	B	C	D	E DIA.	F DIA.	JOINT BOLT DIA.
85#	5 5/16"	2 17/64"	2 15/16"	6"	1 3/32"	1½"	15/16"
100#	6"	2 29/64"	2 7/16"	7"	1 7/32"	1¾"	1 1/16"

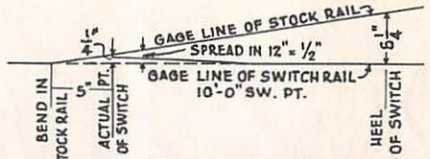
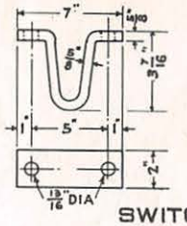
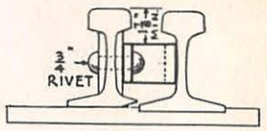
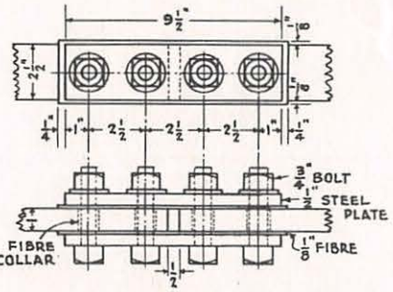


DIAGRAM OF SWITCH ANGLE

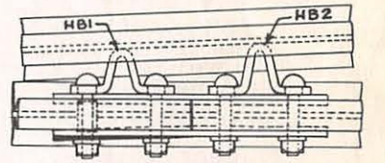




SWITCH STOP



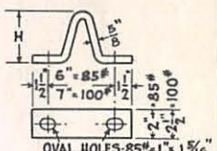
SWITCH ROD INSULATION
ALL RODS INSULATED

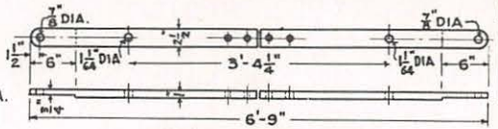


HEEL STOPS

"H" DISTANCE		
RAIL WT.	HB1	HB2
85#	3 15/16"	4 9/16"
100#	3½"	4½"

THIMBLES			
RAIL	I.D.	O.D.	LENGTH
85#	1 1/16"	1 7/16"	2 13/16"
100#	1¼"	1 5/8"	2 7/16"





SWITCH ROD NO.1

SWITCH ROD NO.2

JOINT BAR – B.&M.R.R STANDARD OR APPROVED SECTION. BEND JOINT BAR ⅝" IN 12" AT CENTER. BEVEL TOP CORNER AN AMOUNT EQUAL TO END BEND TO NOTHING AT CENTER. COUNTERBORE BAR TO MAKE GOOD BEARING FOR THIMBLE. MAKE HEEL STOP HOLES OVAL TO FIT BOLT NECK OVAL.

HEEL STOPS – TO BE STAMPED "HB-1" AND "HB-2" AS SHOWN.

BOSTON AND MAINE R.R.

10'0" SPLIT SWITCH

85 & 100 LB. RAILS

APPROVED:

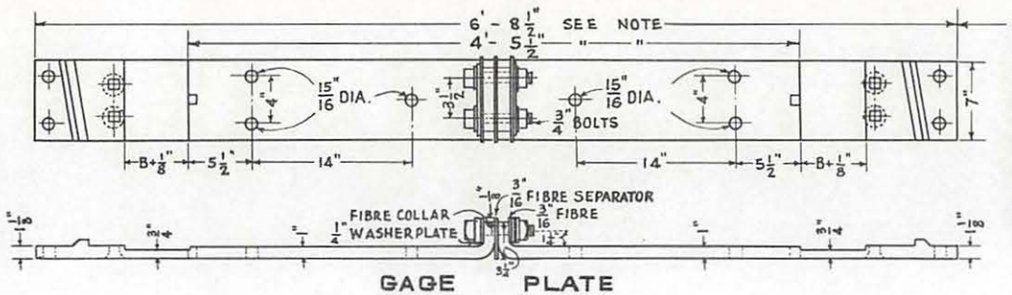
H. F. Fifield
ENGINEER M. OF W.

S. G. Phillips
CHIEF ENGINEER

PLAN	
DRAWN BY H.A.R.	
CHECKED BY A.E.T.	
CORRECT F.W.H.	
ISSUE	DATE
A	8-28-50
B	2-23-51
C	9-20-52

B. SHOULDER INCREASED
C - PLATE NO. 3 SHOULDER REDESIGN

F19 A



GAGE PLATE

NOTE:
THIS DISTANCE WILL VARY DEPENDING ON WHETHER 85# or 100# RAIL IS USED AND ALSO DUE TO VARIATION IN WIDTH OF BASE OF RAIL. THE PLATE SHOULD BE SET UP TO MEASUREMENT SHOWN WITH A 3/16" FIBRE SEPARATOR AS SHOWN.

GAGE PLATES FURNISHED ONLY WHEN SPECIFIED - OTHERWISE FURNISH 2 PLATES NO. 1B.

PLATES FOR NO.7 TURNOUT				
DIMENSIONS OF PLATES NO.5 TO NO.7				
PLATE NO.	A	C	D	E
5	19"	7 9/16"	7 15/16"	15/16"
6	20"	8 3/4"	9 3/16"	7/8"
7	21"	10 1/8"	10 5/8"	13/16"

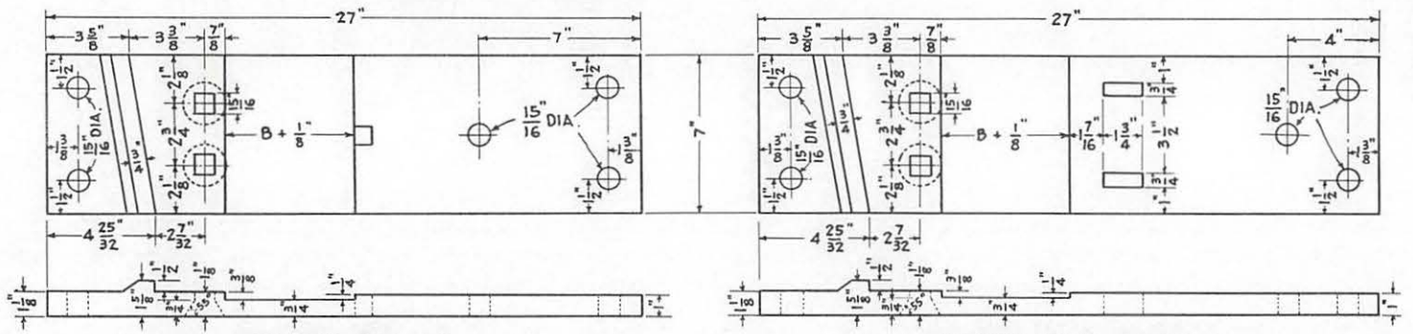
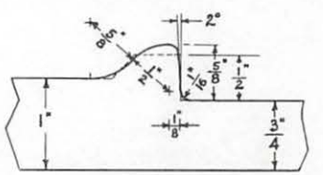


PLATE NO. 1B

PLATE NO.1A AND NO. 1



DETAIL OF SHOULDER PLATE NO.3 OPTIONAL DESIGN

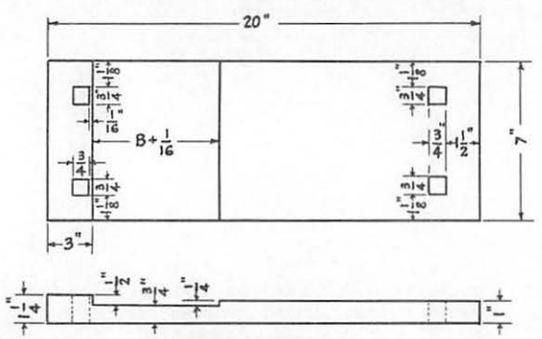


PLATE NO. 3
(SEE DETAIL OF SHOULDER)

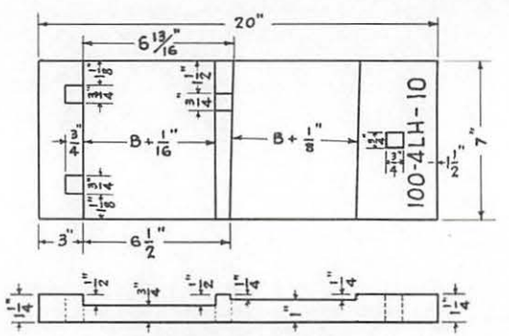
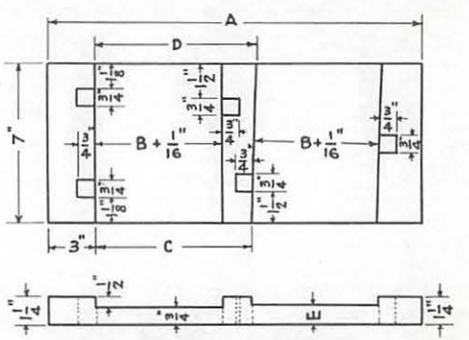


PLATE NO.4 L.H.



PLATES NO.5 TO NO.7

NOTES:
RIGHT HAND PLATES ARE SAME AS LEFT HAND PLATES SHOWN EXCEPT OPPOSITE HAND.

PLATES NO.1B, NO.1A, NO.1 AND GAGE PLATE TO CONFORM TO ADJUSTABLE BRACE AS PER STANDARD PLAN F 19.

EACH PLATE SHALL BE MARKED BY DEEPLY CUT CHARACTERS NOT LESS THAN 3/4" HIGH, DESIGNATING WEIGHT OF RAIL, NUMBER OF PLATE AND LENGTH OF SWITCH IN POSITION SHOWN ON PLATE NO. 4. L.H.

OMIT THESE WHEN FURNISHING GAGE PLATE

LIST OF PLATES REQUIRED	
PLATE NO.	NUMBER REQUIRED
1B	2
1A & 1	6
3	6
4 L.H.	1
4 R.H.	1
5 L.H.	1
5 R.H.	1
6 L.H.	1
6 R.H.	1
7 L.H.	1
7 R.H.	1
TOTAL	22

BOSTON AND MAINE R.R.

SLIDE PLATES FOR 10FT. SWITCH
85 & 100 LB. RAILS

APPROVED:

F. J. Fifield
ENGINEER M. OF W.

CHIEF ENGINEER

PLAN	
DRAWN BY Chk.	
CHECKED BY F.W.H.	
CORRECT... J.P.C.	
ISSUE	DATE
F	5-28-40
G	3-14-42
H	5-15-45
I	12-15-47
J	2-5-53
K	1-4-54
L	5-24-54

F - 4 MORE ADJ. BRACES NEW HEEL STOPS.

G - REVERSED HEEL STOP BOLTS

H - Note for vertical rod added and end hole dia. changed.

I - 115# RAIL ADDED.

J - TIES RENUMBERED

K - ADOPTED M CLIPS TO NO. 1 RODS FOR 112 AND 115 LB. RAIL. OPTIONAL FOR 85 AND 100 LB. RAIL.

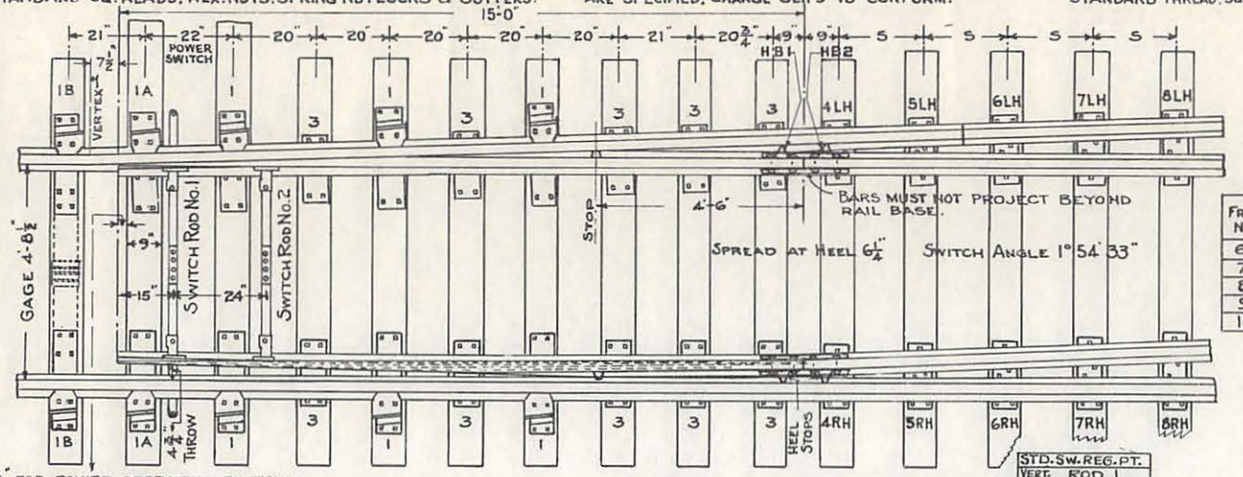
L - ADDED DATA ON SPRING SWITCH RODS.

F20

CLIP BOLTS $\frac{3}{4}$" DIAM. FOR 85# & 100# RAIL; 1" DIAM. FOR 112# & 115# RAIL, STANDARD SQ. HEADS, HEX. NUTS, SPRING NUT LOCKS & COTTERS.

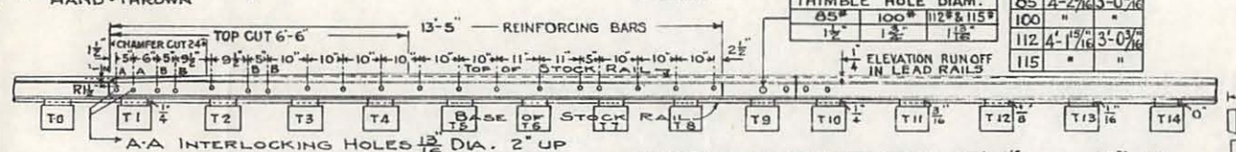
WHEN MANGANESE POINTS OR SAMSON SWITCHES ARE SPECIFIED, CHANGE CLIPS TO CONFORM.

ROD BOLTS 1" DIAM. FOR 85# & 100# RAIL; $1\frac{1}{8}$" DIAM. FOR 112# & 115# RAIL, STANDARD THREAD, SQ. HEADS, HEX. NUTS, AND COTTERS.



2¾" FOR POWER-OPERATED SWITCHES.
1½" " HAND-THROWN "

PLAN



FROG No.	S-TIE SPACING
6	19"
7	19½"
8	21"
9	21"
10	21½"

THIMBLE HOLE DIAM.		
85#	100#	112# & 115#
1½"	1¾"	1 15/16"

STD. SW. REG. PT.		
VERT. ROD WGT.	I A	I M
85	4'-2 3/16"	3'-0 5/16"
100	"	"
112	4'-1 15/16"	3'-0 3/16"
115	"	"

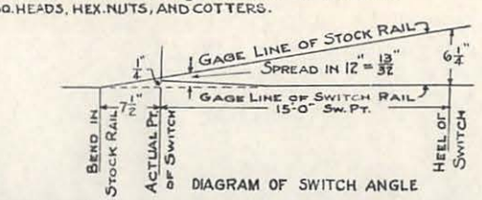
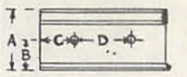


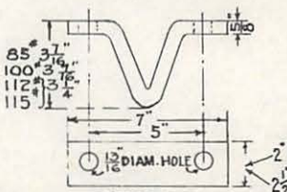
DIAGRAM OF SWITCH ANGLE

NOTE:- SPECIAL DRILLING REQUIRED FOR PIPE THIMBLE

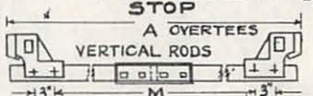
RAIL WEIGHT	RAIL DRILLING A	B	C	D	DIAM. HOLE	JOINT BOLT DIAM.
85#	5 3/16"	2 17/64"	2 15/16"	6"	1 3/32"	15/16"
100#	6"	2 33/64"	2 7/16"	7"	1 3/32"	1 1/16"
112#	6 5/8"	2 7/8"	2½"	6½"	1 1/4"	1 5/16"
115#	6 5/8"	2 7/8"	3½"	6"	1 1/4"	1 3/8"

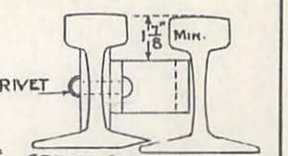


RAIL DRILLING



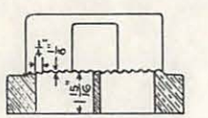
STOP

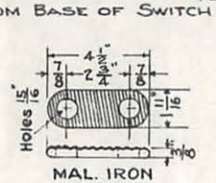


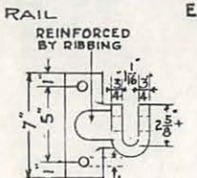


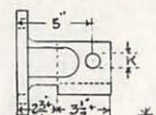
SPRING SW. REGULAR PT.

RAIL WEIGHT	VERT. ROD 1 A	M	VERT. ROD 1 A	M
85#	4'-0 7/16"	2'-11 3/16"	4'-1¼"	3'-0"
100#	-	"	4'-1 7/16"	2'-11 15/16"
112#	"	2'-10 7/16"	4'-1¼"	2'-11½"
115#	"	"	"	"

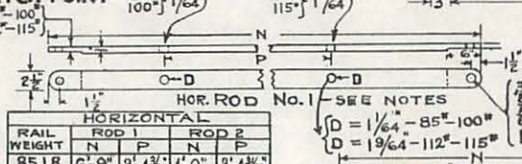






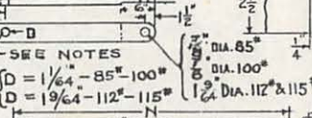


ELEVATION OF SWITCH POINT

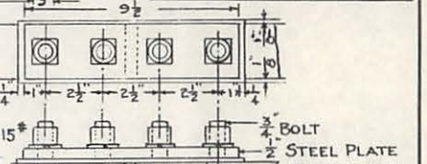


HORIZONTAL RAIL WEIGHT	ROD 1 N	ROD 1 P	ROD 2 N	ROD 2 P
85 LB.	6'-9"	3'-4 3/16"	4'-0"	3'-4 3/32"
100 "	"	"	"	"
112 "	"	3'-1 15/16"	"	3'-4 21/32"
115 "	"	3'-2 5/32"	"	3'-4 5/8"

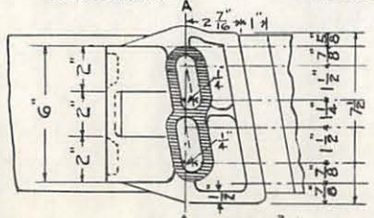
ROD TABLE



SWITCH RODS

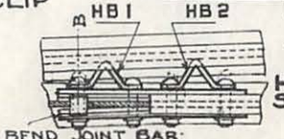


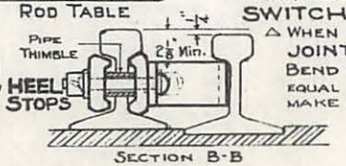
INSULATE ALL SWITCH RODS



CLIP TABLE RAIL WEIGHT	H	J	K
85#	2½"	13/16"	1¼"
100#	2½"	1 1/16"	1 1/64"
112# & 115#	3"	1 1/16"	1 1/64"

CLIP



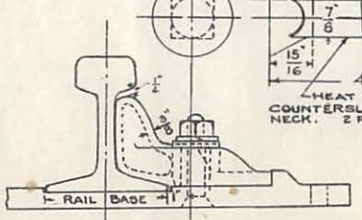


△ WHEN VERTICAL No. 1 ROD AND M CLIP ARE USED REFER TO F 29

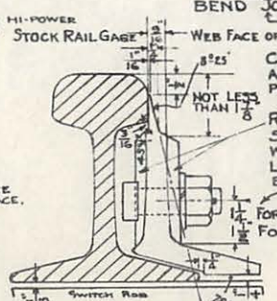
JOINT BAR - B. AND M. RR. STANDARD OR APPROVED SECTION. BEND JOINT BAR ¼" IN 12" AT CENTER. BEVEL TOP CORNER AN AMOUNT EQUAL TO END BEND, TO NOTHING AT CENTER. REAM BAR TO MAKE GOOD BEARING FOR EXTRA HEAVY PIPE THIMBLE.

HEEL STOPS TO BE BRANDED HB1 AND HB2 AS INDICATED.

△ TO BE DRILLED BY MANUFACTURER.



ADJUSTABLE BRACE



SECTION AND PLANING OF POINT

CHAMFER CUT:- MAKE SWITCH POINT $\frac{1}{16}$" THICK AND RUN OUT IN 2'-0" FROM END OF POINT. ROUND POINT TO $\frac{1}{2}$" RADIUS AND GRIND TO A SHARP EDGE.

REINFORCING.- $\frac{3}{8}$" FOR 85# & 100#, - $\frac{1}{2}$" FOR 112# & 115# RAIL SECURED BY $\frac{7}{8}$" RIVETS IN ℄ OF WEB EXCEPT WHERE BOLTS ARE USED - AS INDICATED BY LETTERS "A" & "B". SPRING SWITCH:- BOTH POINTS SHOULD BE REINFORCED WITH 1¼" BAR (TO FIT RAIL)

(CLIP BOLTS)
FOR 85# AND 100# RAIL
FOR 112# & 115# RAIL

NOTE:-
* USE TYPE M CLIP ON ROD NO. 1. (SEE F29) FOR 112 AND 115 LB. RAIL
** " 85 " 100 " " OPTIONAL:- IN ACCORDANCE WITH IMPORTANCE OF LOCATION

NOTE:- SPRING SWITCHES FOR MAIN LINE USE TO BE EQUIPPED WITH TYPE "M" RODS THROUGHOUT. FOR YARD USE: NO. 1. ROD TO BE TYPE "M" OR ALL IN ACCORDANCE WITH REQUIREMENTS.

BOSTON AND MAINE R.R

STANDARD

15'0" SPLIT SWITCH

85, 100, 112 & 115 LB. RAILS

APPROVED:

H. F. Fifield
ENGINEER M. OF W.

S. J. Phillips
CHIEF ENGINEER

PLAN	
DRAWN BY R.B.H.	
CHECKED E.M.H.	
CORRECT F.W.H.	
ISSUE	DATE
D	3-14-42
E	5-14-45
F	12-15-47
G	2-5-53
H	1-4-54
I	5-24-54

D - ADJUSTABLE BRACES AND HEEL STOPS.
E - Add note for vertical rod and end hole dia. changed
F - 115# RAIL ADDED.
G - TIES NUMBERED.
H - CORRECTION TO SWITCH STOPS. ADOPTED "M" CLIPS TO NOS. 1 & 3 RODS ON STD. SWITCHES.
I ADDED DATA ON VERTICAL RODS FOR SPRING SWITCHES.

F 21

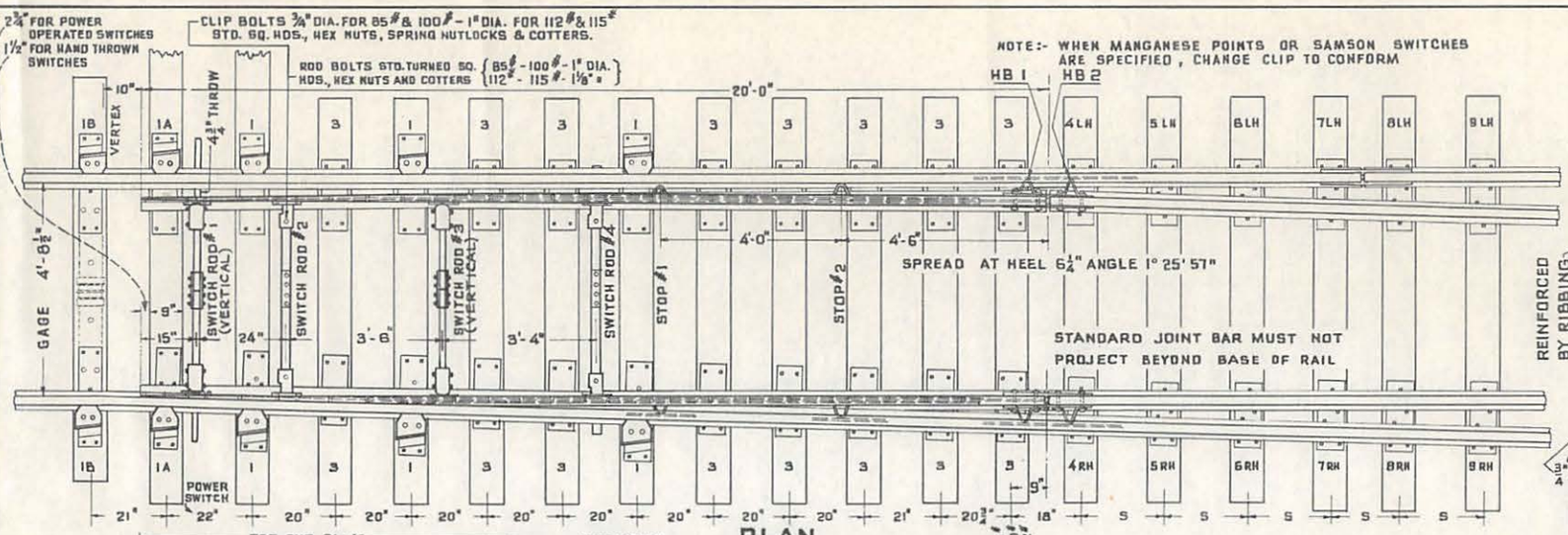
2¾" FOR POWER OPERATED SWITCHES
1½" FOR HAND THROWN SWITCHES

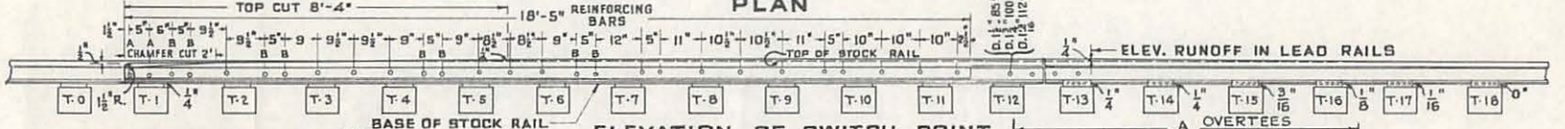
CLIP BOLTS ¾" DIA. FOR 85# & 100# - 1" DIA. FOR 112# & 115# STD. SQ. HDS., HEX NUTS, SPRING NUTLOCKS & COTTERS.

ROD BOLTS STD. TURNED SQ. HDS., HEX NUTS AND COTTERS { 85# - 100# - 1" DIA. / 112# - 115# - 1⅛" }

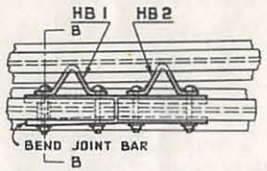
NOTE:- WHEN MANGANESE POINTS OR SAMSON SWITCHES ARE SPECIFIED, CHANGE CLIP TO CONFORM

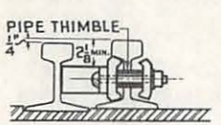
FROG NO.	TIE SPACING -S-
12	20½"





A - A - INTERLOCKING HOLES 13/16" DIA. 2" UP FROM BASE SWITCH RAIL





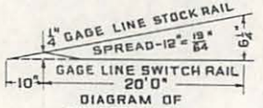
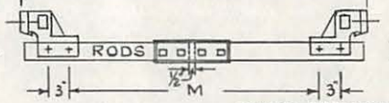
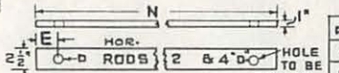


DIAGRAM OF SWITCH ANGLE





NOTE:-
NO. 1 ROD TO BE TYPE "M" FOR ALL WEIGHTS OF RAIL (SEE F-29) TO BE DRILLED BY MANUFACTURER. OTHER VERTICAL RODS TO BE DRILLED ON ONE END IN FIELD.

SWITCH RODS

SWITCH ROD DRILLING

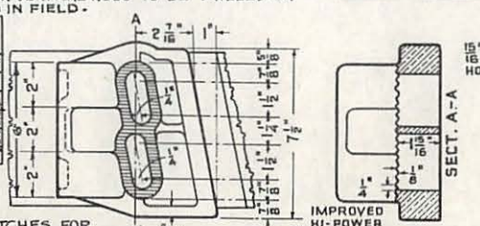
RAIL	VERT. ROD 1 A	VERT. ROD 1 M	HOR. ROD 2 N	VERT. ROD 3 E	VERT. ROD 4 A	VERT. ROD 4 M	HOR. ROD 4 N	HOR. ROD 4 E	HOR "D"
85#	4-2⅛	3-0 1/16	4'-0"	3⅜"	4'-3⅛	3'-2½	6'-0"	1'-3"	1 1/64"
100#	4'-2⅛	3'-0⅞	4'-0"	3¾"	"	"	6'-0"	1'-3"	1 1/64"
112#	4'-1⅞	3'-0⅞	4'-0"	3⅜"	4'-3⅞	3'-1 15/16	6'-0"	1'-3"	1 3/64"
115#	"	"	4'-0"	3⅜"	"	"	6'-0"	1'-3"	1 3/64"

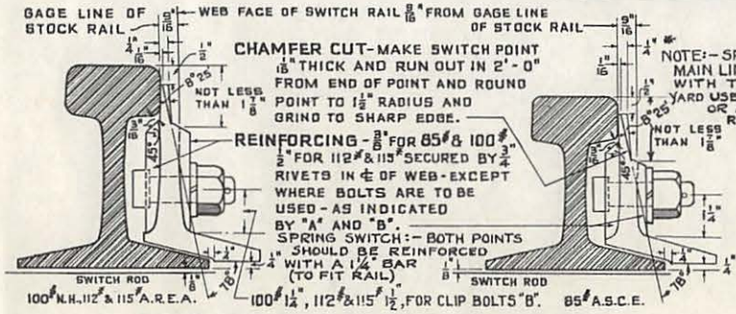
JOINT BAR - B. & M.R.R. STANDARD OR APPROVED SECTION. BEND JOINT BAR ¼" IN 12" AT CENTER. BEVEL TOP CORNER AN AMOUNT EQUAL TO END BEND, TO NOTHING AT CENTER. REAM BAR TO MAKE GOOD BEARING FOR EXTRA HEAVY PIPE THIMBLE. MAKE HEEL STOP HOLES OVAL TO TAKE BOLT HEAD OVAL.

HEEL STOPS

HEEL STOPS TO BE BRANDED HB1 AND HB2 AS INDICATED.

SPRING SWITCH & VERTICAL RODS REGULAR PT.	85# A	85# M	100# A	100# M	112#-115# A	112#-115# M
1	4'-0⅞	2'-11¾	4'-0⅞	2'-11⅞	4'-0⅞	2'-10⅞
2	4'-1"	2'-11¾	4'-1"	2'-11¾	4'-0⅞	2'-11⅜
3	4'-2"	3'-0¼	4'-2"	3'-0¼	4'-1⅛	3'-0⅜
4	4'-2⅜	3'-0⅝	4'-2⅜	3'-1"	4'-2¼	3'-0½

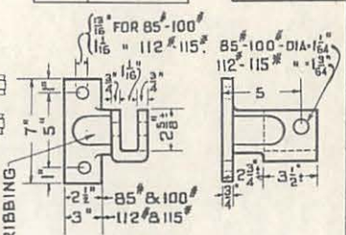



GAGE LINE OF STOCK RAIL
WEB FACE OF SWITCH RAIL 5/16" FROM GAGE LINE OF STOCK RAIL
CHAMFER CUT - MAKE SWITCH POINT ⅛" THICK AND RUN OUT IN 2'-0" FROM END OF POINT AND ROUND POINT TO 1½" RADIUS AND GRIND TO SHARP EDGE.
NOT LESS THAN 1⅛"
REINFORCING - ⅜" FOR 85# & 100# ½" FOR 112# & 115# SECURED BY ¾" RIVETS IN ℄ OF WEB - EXCEPT WHERE BOLTS ARE TO BE USED - AS INDICATED BY "A" AND "B".
SPRING SWITCH:- BOTH POINTS SHOULD BE REINFORCED WITH A 1¼" BAR (TO FIT RAIL)
SWITCH ROD
SWITCH ROD
100# N.H., 112# & 115# A.R.E.A.
100# 1¼", 112# & 115# 1½", FOR CLIP BOLTS "B".
85# A.S.C.E.

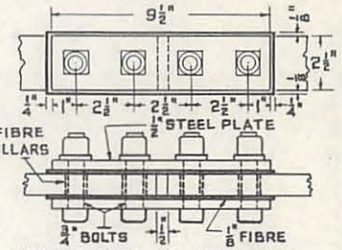
SECTIONS AND PLANING OF POINTS

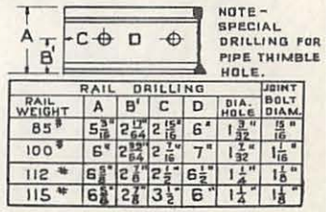
ADJUSTABLE BRACE

NOTE:- SPRING SWITCHES FOR MAIN LINE USE: TO BE EQUIPPED WITH TYPE "M" RODS THROUGHOUT. FOR YARD USE: NO. 1 ROD TO BE TYPE "M" OR ALL IN ACCORDANCE WITH REQUIREMENTS



STOP NO.	85# Y	100# Y	112# & 115# Y
1	2⅝"	2 13/16"	2⅞"
2	3 13/16	3¾"	3 11/16"





RAIL WEIGHT	RAIL DRILLING A	B	C	D	DIA. HOLE	JOINT BOLT DIAM.
85#	5 5/16	2 17/64	2 15/16"	6"	1 3/32"	15/16"
100#	6"	2 13/64	2 15/16"	7"	1 3/32"	1 1/16"
112#	6 5/8"	2⅛"	2½"	6½"	1¼"	1 1/16"
115#	6 5/8"	2⅛"	3½"	6"	1¼"	1⅛"

BOSTON AND MAINE R.R.

STANDARD

20'0" SPLIT SWITCH

85, 100, 112 & 115 LB. RAILS

APPROVED

F. F. Field
ENGINEER M. OF W.

S. G. Phillips
CHIEF ENGINEER

PLAN	
DRAWN BY R.B.H.	
CHECKED BY E.M.H	
CORRECT F.W.H	

ISSUE	DATE
F	3-14-42
G	5-15-45
H	12-15-47
I	2-5-53
J	1-4-54
K	5-24-54

F - HEEL STOPS, & ADJUSTABLE BRACE LOCATIONS

G - Add note Vertical Rod and Rod drilling chgd.

H - 115# RAIL ADDED.

I - TIES NUMBERED.

J - ADOPTED "M" CLIPS TO NOS. 1 & 4 RODS.

K - ADDED DATA ON SPRING SWITCH RODS.

F22

2¾" FOR POWER OPERATED SWITCHES

1½" FOR HAND THROWN SWITCHES

CLIP BOLTS ¾" DIA. FOR 85# & 100# - 1" DIA. FOR 112# & 115# STD. SQ. HEADS, HEX. NUTS, SPRING NUTLOCKS & COTTERS.

HOR. ROD BOLTS STD. T'D SQ. HDS. HEX. NUTS & COTTERS (85# & 100# = 1" DIA.; 112# & 115# = 1⅛" DIA.)

NOTE:- WHEN MANGANESE POINTS OR SAMSON SWITCHES ARE SPECIFIED CHANGE CLIP TO CONFORM

30'0"

HB 1 HB 2

VERTEX

GAGE 4'-8½"

SWITCH ROD #1 (VERTICAL)

SWITCH ROD #2

SWITCH ROD #3

SWITCH ROD #4 (VERTICAL)

SWITCH ROD #5

STOP #1

STOP #2

STOP #3

THROW POWER SWITCH

SPREAD AT HEEL 6¼" ANGLE 0°57'18"

STANDARD JOINT BAR MUST NOT PROJECT BEYOND BASE OF RAIL

FROG NO.	TIE SPACING S
15	19½"
20	21"

21" 22" 20" 20" 20" 20" 20" 20" 20" 20" 20" 20" 20" 20" 20" 20" 20" 20" 20" 20¾" 18" S S S S S S S S S S

PLAN

28'-0"

TOP CUT - 12'0"

CRAMPER CUT

TOP OF STOCK RAIL

ELEVATION RUNOFF IN LEAD RAILS

T-0 T-1 T-2 T-3 T-4 T-5 T-6 T-7 T-8 T-9 T-10 T-11 T-12 T-13 T-14 T-15 T-16 T-17 T-18 T-19 T-20 T-21 T-22 T-23 T-24 T-25 T-26 T-27

A-A - INTERLOCKING HOLES ⅜" DIA. 2" UP FROM BASE SWITCH RAIL

BASE OF STOCK RAIL

ELEVATION OF SWITCH POINT

VERT ROD	SPRING SWITCH REGULAR PT. 85" — 100"	
NO.	A	M
1	4'-0⅜"	2'-11⅞"
2	4'-0¾"	2'-11½"
3	4'-1¾"	3'-0½"
4	4'-2⅝"	3'-1⅛"
	NO. 5 ROD	
WT. RAIL	A	M
85#	4'-2⅛"	3'-0⅞"
100#	4'-2⅜"	3'-1⅛"

NOTE:- SPRING SWITCHES FOR MAIN LINE USE: TO BE EQUIPPED WITH TYPE "M" RODS THROUGHOUT. FOR YARD USE: NO. 1. ROD TO BE TYPE M. OR ALL IN ACCORDANCE WITH REQUIREMENTS.

STOP NO.	112#&115# Y	100# Y	85# Y
1	2½"	2⅝"	2²³/₃₂"
2	3¼"	3¹⁹/₃₂"	3½"
3	4⅛"	4⅞₂"	4⁵/₁₆"

NOTE: — NO. 1 ROD TO BE TYPE "M" FOR 85, 100, 112 & 115 LB. RAIL (SEE F-29)

NOTE:- NO. 1. VERTICAL ROD TO BE DRILLED BY MANUFACTURER. OTHER VERTICAL RODS TO BE DRILLED ON ONE END IN FIELD.

HB 1 HB 2

BEND JOINT BAR

PIPE THIMBLE

JOINT BAR - B. & M.R.R. STANDARD OR APPROVED SECTION. BEND JOINT BAR ¼" IN 12" AT CENTER. BEVEL TOP CORNER AN AMOUNT EQUAL TO END BEND, TO NOTHING AT CENTER. REAM BAR TO MAKE GOOD BEARING FOR EXTRA HEAVY PIPE THIMBLE. MAKE HEEL STOP HOLES OVAL TO TAKE BOLT HEAD OVAL.

SECTION B-B

OVERTEES

VERT. RODS

2½" x 1¼"

"D" RODS - 2-3- & 5

(THIS HOLE TO BE DRILLED IN FIELD)

SWITCH ROD DRILLING

WT. RAIL	VERT. ROD 1 A	VERT. ROD 1 M	HOR. ROD 2 H	HOR. ROD 2 E	HOR. ROD 3 N	HOR. ROD 3 E	VERT. ROD 4 A	VERT. ROD 4 M	HOR. ROD 5 N	HOR. ROD 5 E	HOR "D"
85#	4'-2⅛"	3'-0⅞"	4'-0"	3¾"	4'-0"	3¾"	4'-4⅛"	3'-2⅛"	6'-0"	1'-3"	1 1/64"
100#	"	"	4'-0"	3¾"	4'-0"	3¾"	"	"	6'-0"	1'-3"	1 1/64"
112#	4'-1⅞"	3'-0⅛"	4'-0"	3⅞"	4'-0"	3⅞"	4'-3⅜"	3'-2⅛"	6'-0"	1'-3"	1 3/64"
115#	"	"	4'-0"	3⅞"	4'-0"	3⅞"	"	"	6'-0"	1'-3"	1 3/64"

HEEL STOPS

HEEL STOPS TO BE BRANDED HB1 AND HB2 AS INDICATED.

IMPROVED HI-POWER NUT LOCK

HEAT TREATED BOLT C.S.K. HEAD SQUARE NECK 2 REQUIRED

RAIL BASE

PLATES 1B, 1A, 1 & G.PL.

ADJUSTABLE BRACE

MALLEABLE IRON WASHER

SECT. A-A

VERT ROD No.	SPRING SWITCH REGULAR PT. 112" — 115" A	M
1	4'-0⅜"	2'-10⅜"
2	4'-0¾"	2'-11"
3	4'-1¾"	3'-0"
4	4'-2⅜"	3'-0⅝"
5	4'-2¼"	3'-0½"

GAGE LINE OF STOCK RAIL

GAGE LINE OF STOCK RAIL

SPREAD IN 12" = ¾"

GAGE LINE OF SWITCH RAIL 30'-0" SW. PT.

BEND IN ST. RAIL

ACTUAL PT. OF SW.

HEEL OF SWITCH

DIAGRAM OF SWITCH ANGLE

WEB FACE OF SWITCH RAIL 3/16" FROM GAGE LINE OF STOCK RAIL

CHAMFER CUT - MAKE SWITCH POINT ⅛" THICK AND RUN OUT IN 2'-0" FROM END OF POINT AND ROUND POINT TO A 1½" RADIUS AND GRIND TO A SHARP EDGE.

REINFORCING - ¾" FOR 85# & 100# AND ½" FOR 112 & 115 SECURED BY ¾" RIVETS. IN ℄ OF WEB - EXCEPT WHERE BOLTS ARE TO BE USED - AS INDICATED BY "A" & "B".

SPRING SWITCHES: - BOTH POINTS SHOULD BE REINFORCED WITH A 1¼" BAR (TO FIT RAIL)

8°25'

NOT LESS THAN 1⅛"

45°

SWITCH ROD N.H. 100 & A.R.E.A. 112 & 115

100 1¼, 112 & 115 1½, FOR CLIP BOLTS 8".

SWITCH ROD A.S.C.E. 85 LB.

SECTIONS AND PLANING OF POINTS

9½"

FIBRE COLLAR

1" STEEL PLATE

⅝" BOLT

⅝" FIBRE

SWITCH RODS ALL INSULATED

RAIL WEIGHT	A	B'	C	D	DIA HOLE	JOINT BOLT DIA.
112#	6⅝"	2⅛"	2⅛"	6⅛"	1¼"	1⅛"
100#	6"	2 3/16"	2 3/16"	7"	1 7/32"	1 1/16"
85#	5 3/16"	2 17/64"	2 15/16"	6"	1 3/32"	15/16"
115#	6⅝"	2⅛"	3⅛"	6"	1¼"	1⅛"

RAIL DRILLING

NOTE: SPECIAL DRILLING FOR PIPE THIMBLE HOLE.

Y

1⅛" MIN.

¾" RIVET

5" 1" 1"

⅝" DIA. HOLES

STOP

7" 5" 1" 1"

85# 100# 2½"

3-112# & 115#

DIAM. - 85# - 100# 1 1/16" 112# 115#

REINFORCED BY RIBBING

¾" 2¾" 3½" 5"

1 1/64" DIA. - 85# & 100#

1 3/64" DIA. - 112# & 115#

CLIP

BOSTON AND MAINE R.R.

STANDARD

30'0" SPLIT SWITCH

85, 100, 112 & 115 LB. RAILS

APPROVED

H. F. Fifield
ENGINEER M. OF W.

S. G. Phillips
CHIEF ENGINEER

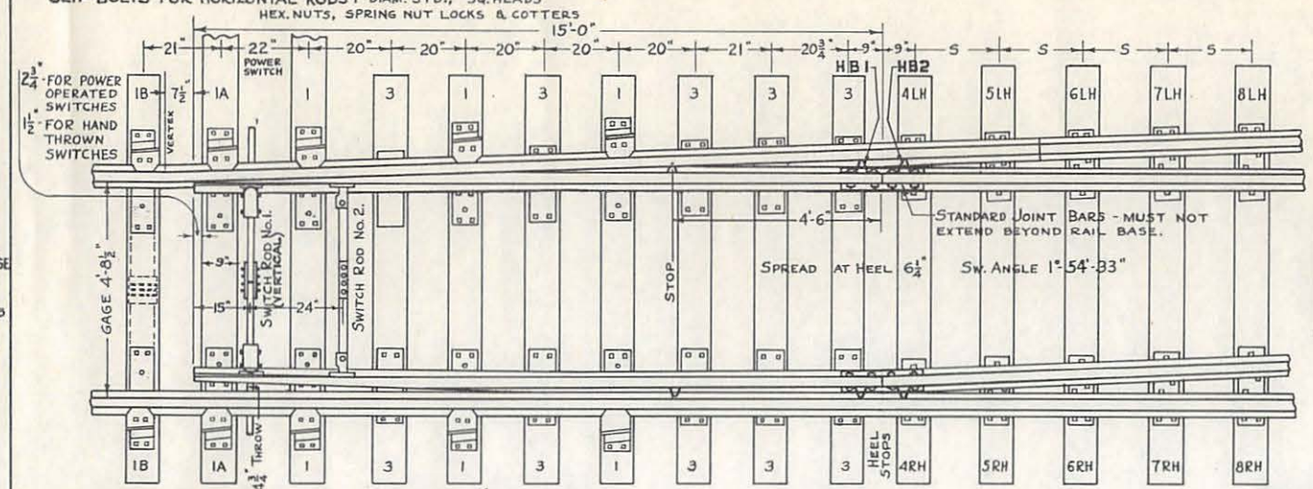
PLAN	
DRAWN BY	J.M.H.
CHECKED	E.W.H.
CORRECT	F.W.H.

ISSUE	DATE
F	3-14-42
G	5-14-45
H	2-5-53
I	1-4-54
J	5-24-54

F - REDRAWN WITH HEEL STOP & RAIL BRACE CHANGE
G - NOTE VERTICAL ROD.
H - TIES NUMBERED
I - ADOPTED M CLIPS TO NO. 1 ROD
J - ADDED DATA ON SPRING SWITCH RODS.

F 24

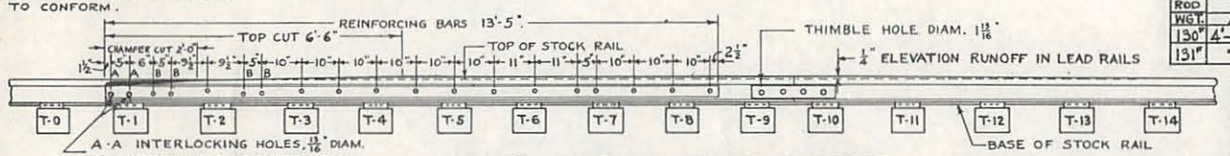
CLIP BOLTS FOR HORIZONTAL RODS 1" DIAM. STD., SQ. HEADS HEX. NUTS, SPRING NUT LOCKS & COTTERS



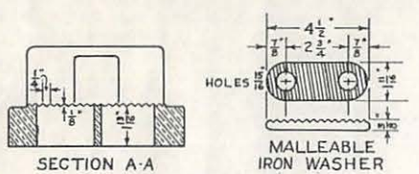
PLAN

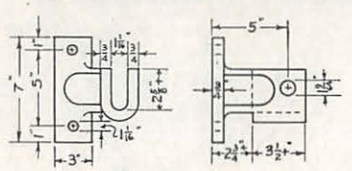
WHEN MANGANESE POINTS OR SAMSON SWITCHES ARE SPECIFIED - CHANGE CLIP TO CONFORM.

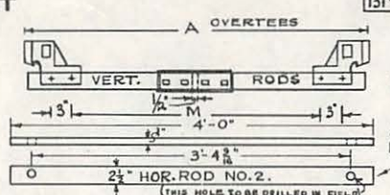
ROD BOLTS 1⅛" DIAM. TURNED, SQ. HEADS, HEX. NUTS & COTTERS



ELEVATION OF SWITCH POINT

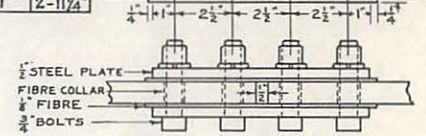




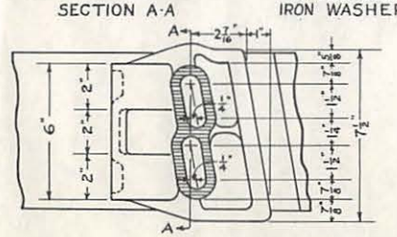


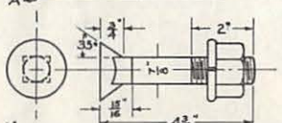
SWITCH RODS

USE VERTICAL No. 1 ROD AND M CLIP (SEE F 29.) TO BE DRILLED BY MANUFACTURER.



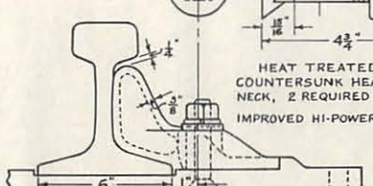
INSULATE ALL SWITCH RODS



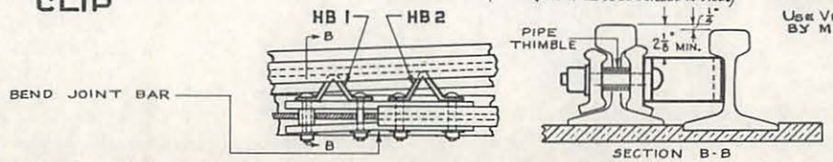


HEAT TREATED BOLT COUNTERSUNK HEAD, SQUARE NECK, 2 REQUIRED PER BRACE.

IMPROVED HI-POWER NUT LOCK



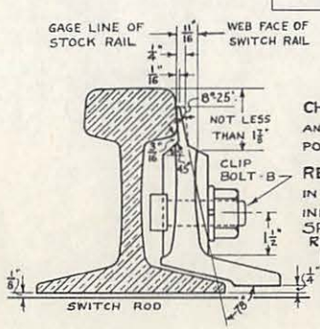
ADJUSTABLE BRACE



HEEL STOPS

HEEL STOPS TO BE BRANDED HB1 AND HB2 AS INDICATED.

JOINT BAR: - B. AND M. RR. STANDARD, OR APPROVED SECTION. BEND JOINT BAR ¼" IN 12" AT CENTER. BEVEL TOP CORNER AN AMOUNT EQUAL TO END BEND TO NOTHING AT CENTER. REAM BAR TO MAKE GOOD BEARING FOR EXTRA HEAVY PIPE THIMBLE.



SECTION AND PLANING OF POINT

CHAMFER CUT: - MAKE SWITCH POINT ⅛" THICK, AND RUN OUT IN 2'-0" FROM END OF POINT. ROUND POINT TO 1½" RADIUS, AND GRIND TO A SHARP EDGE.

REINFORCING: - ½" THICK, SECURED BY ⅞" RIVETS IN ℄ OF WEB, EXCEPT WHERE BOLTS ARE USED - AS INDICATED BY LETTERS "A" AND "B".

SPRING SWITCH: - BOTH POINTS SHOULD BE REINFORCED WITH A 1¼" BAR (TO FIT RAIL)

NOTE: - SPRING SWITCHES FOR MAIN LINE USE: TO BE EQUIPPED WITH TYPE "M" RODS THROUGHOUT. FOR YARD USE: NO. 1 ROD TO BE TYPE "M" OR ALL IN ACCORDANCE WITH REQUIREMENTS.

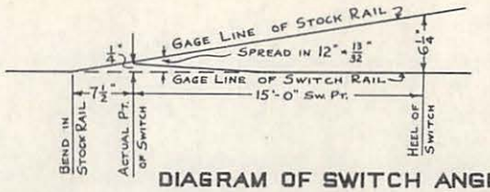
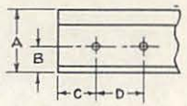
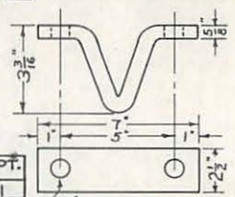

GAGE LINE OF STOCK RAIL
SPREAD IN 12" - 13/32"
GAGE LINE OF SWITCH RAIL
15'-0" Sw. Pr.
BEND IN STOCK RAIL
ACTUAL PT. OF SWITCH
HEEL OF SWITCH

DIAGRAM OF SWITCH ANGLE

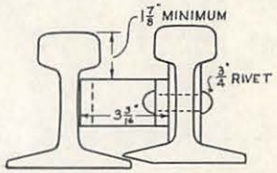
FROG No.	TIE SPACING 5
6	19"
7	19½"
8	21"
9	21"
10	21½"

RAIL DRILLING						JOINT BOLT DIAM.
WEIGHT	A	B	C	D	HOLE DIAM.	
130 LB.	6¾"	3⅛"	2 29/32"	5½"	1¼"	1⅛"
131 LB.	7⅛"	3 3/32"	2½"	6½"	1¼"	1⅛"



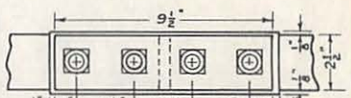


STOP



STD. SW. REG. PT.		
VERT. ROD	ROD #1	
WGT.	A	M
130#	4'-1 11/16"	2'-11 5/16"
131#	"	"

SPRING SWITCH REG. PT.				
VERT. ROD	ROD #1		ROD #2	
WGT.	A	M	A	M
130#	4'-0 3/16"	2'-10 7/16"	4'-1 1/16"	2'-11 5/16"
131#	"	"	4'-1"	2'-11 1/4"



BOSTON AND MAINE R.R.

STANDARD

15'0" SPLIT SWITCH

130 & 131 LB. R.E. RAILS

APPROVED

H. F. Fifield
ENGINEER M. OF W.

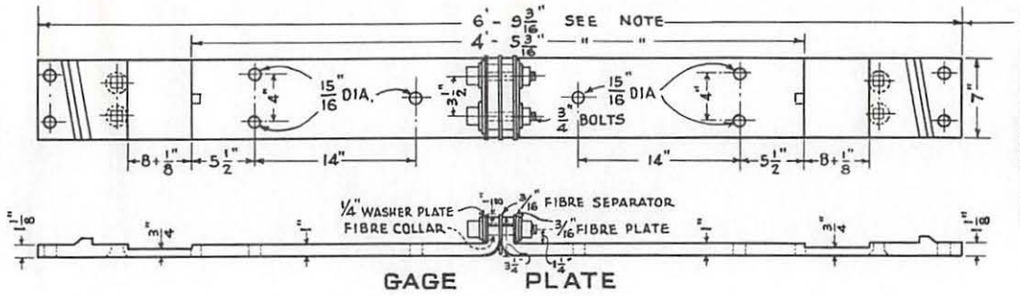
S. G. Phillips
CHIEF ENGINEER

PLAN	
DRAWN BY H.A.R.	
CHECKED BY G.H.B.	
CORRECT F.W.H.	
ISSUE	DATE
G	2-23-51
H	9-20-52

G - REDRAWN GAGE PLATE REVISED SHOULDER INCREASED ADDITIONAL PLATES

H - PLATE NO. 3 SHOULDER REDESIGN

F24 A



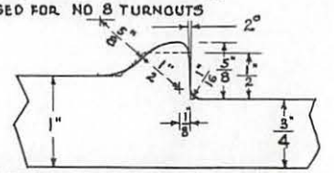
GAGE PLATE

NOTE:
THIS DISTANCE WILL VARY DEPENDING ON WHETHER 130# OR 131# RAIL IS USED AND ALSO DUE TO VARIATION IN WIDTH OF BASE OF RAIL. THE PLATE SHOULD BE SET UP TO MEASUREMENT SHOWN WITH A 3/16" FIBRE SEPARATOR AS SHOWN.

GAGE PLATES FURNISHED ONLY WHEN SPECIFIED - OTHERWISE FURNISH 2 PLATES NO. 1B.

PLATES FOR NO. 10 TURNOUT				
DIMENSIONS OF PLATES NO. 5 TO NO. 9				
PLATE NO.	A	C	D	E
5	18 1/2"	7 3/16"	7 7/16"	15/16"
6	19 1/2"	7 31/32"	8 1/4"	7/8"
7	20 1/2"	8 27/32"	9 1/8"	13/16"
8	21 1/2"	9 3/4"	10 1/32"	3/4"
9	22 1/2"	10 11/16"	11"	3/4"

THESE PLATES MAY ALSO BE USED FOR NO 8 TURNOUTS



DETAIL OF SHOULDER - PLATE NO. 3 OPTIONAL DESIGN

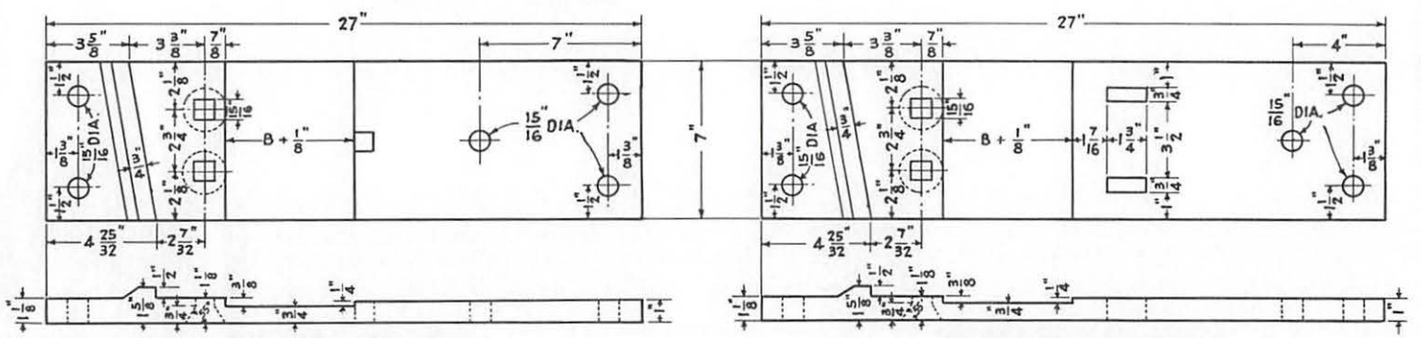


PLATE NO. 1B

PLATE NO. 1A AND NO. 1

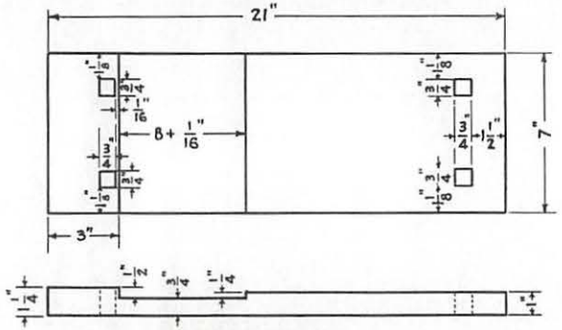


PLATE NO. 3
(SEE DETAIL OF SHOULDER)

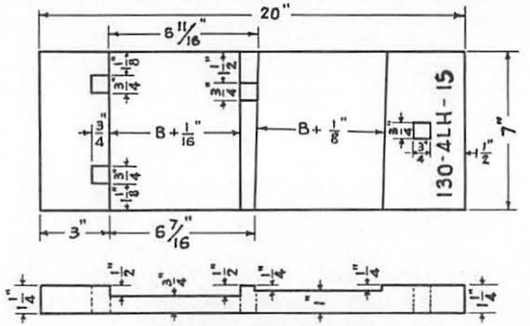
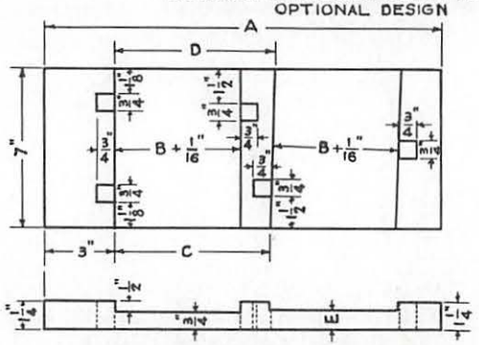


PLATE NO. 4 L.H.



PLATES NO. 5 TO NO. 9 - L.H.

NOTES:

RIGHT HAND PLATES ARE SAME AS LEFT HAND PLATES SHOWN EXCEPT OPPOSITE HAND.

PLATES NO. 1B, NO. 1A, NO. 1 AND GAGE PLATE TO CONFORM TO ADJUSTABLE BRACE AS PER STANDARD PLAN F 24.

EACH PLATE SHALL BE MARKED BY DEEPLY CUT CHARACTERS NOT LESS THAN 3/4" HIGH, DESIGNATING WEIGHT OF RAIL, NUMBER OF PLATE AND LENGTH OF SWITCH IN POSITION SHOWN ON PLATE NO. 4 L.H.

OMIT THESE WHEN FURNISHING GAGE PLATE

LIST OF PLATES REQUIRED			
PLATE NO.	NUMBER REQUIRED	PLATE NO.	NUMBER REQUIRED
1B	2	7LH	1
1A & 1	8	7RH	1
3	10	8LH	1
4LH	1	8RH	1
4RH	1	9LH	1
5LH	1	9RH	1
5RH	1	TOTAL	32
6LH	1		
6RH	1		

BOSTON AND MAINE R.R.

STANDARD

SLIDE PLATES FOR 15 FT. SWITCH

130 & 131 LB. RAILS

APPROVED:

F. F. Fifield
ENGINEER M. OF W.

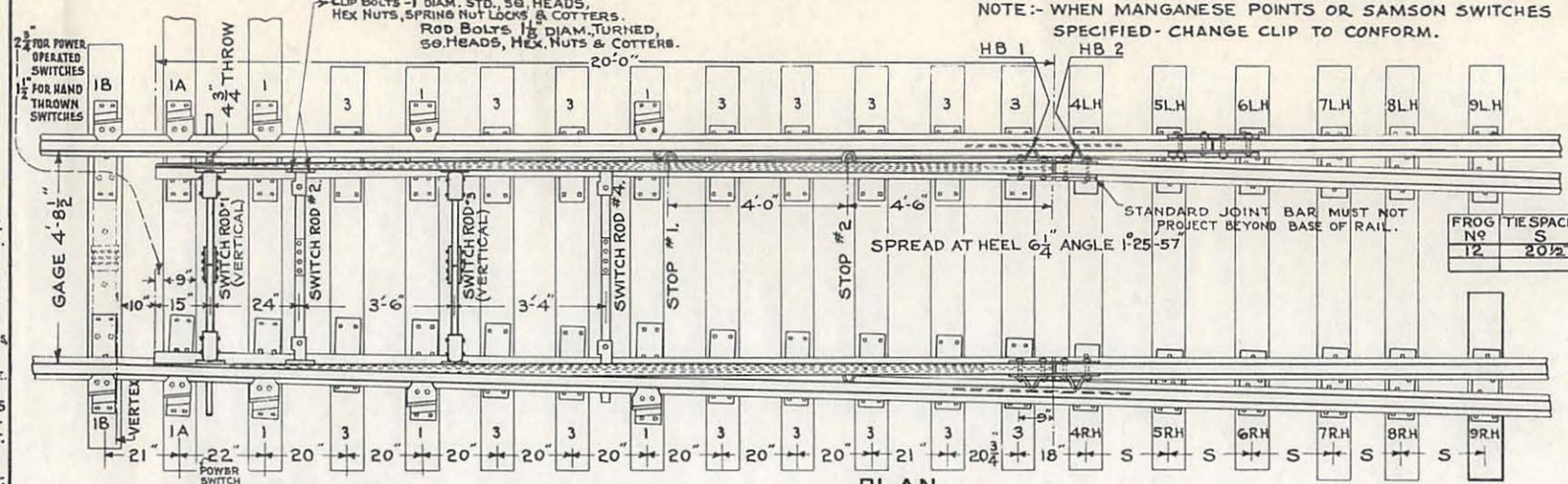
CHIEF ENGINEER

PLAN	
DRAWN BY P.L.D.	
CHECKED Ewm.	
CORRECT J.J.R.	
ISSUE	DATE
A	4-22-30
B	11-2-31
C	3-30-36
D	5-15-45
E	2-5-53
F	1-4-54
G	5-24-54

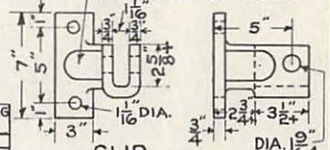
A—GAGE PLATE.
B-JOINT BAR NOTE.
C-131# RAIL NOTES SWITCH PT. - HEEL BLOCK - SWITCH RODS-2 3-4 DRILLING.
D-ADJUSTABLE BRACES, HEEL STOPS & #1 SWITCH ROD NOTE.
E-TIES NUMBERED.
F-ADOPTED "M" CLIPS TO NOS. 1 & 3 RODS.
G-ADDED #1 VERT. ROD TO SPLIT SWITCH-ADDED #4 VERT. ROD TO SPRING SWITCH.

F25

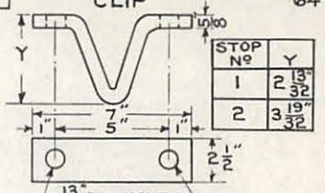
NOTE:- WHEN MANGANESE POINTS OR SAMSON SWITCHES ARE SPECIFIED- CHANGE CLIP TO CONFORM.

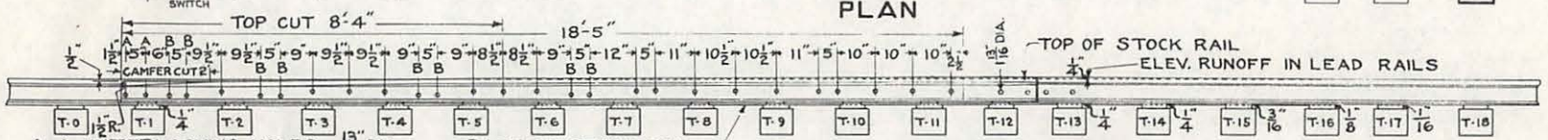


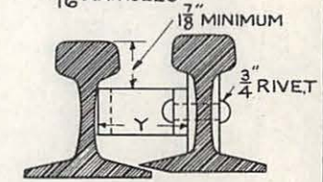
FROG Nº	TIE SPACING S
12	20½"

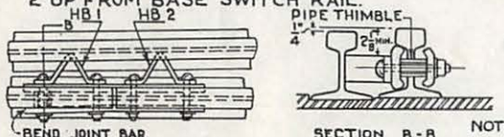


STOP Nº	Y
1	2 13/32"
2	3 19/32"





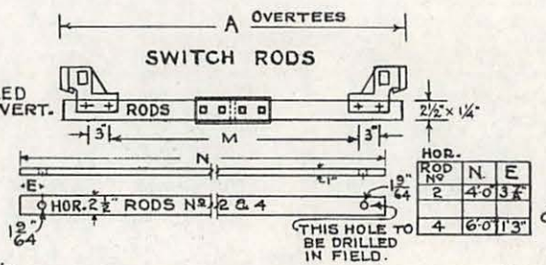




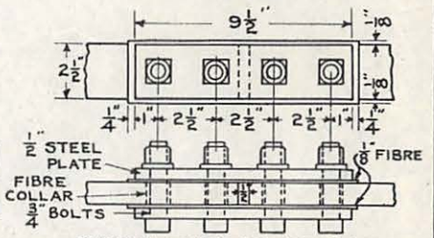
JOINT BAR - B. & M.R.R. STANDARD OR APPROVED SECTION. BEND JOINT BAR ¼" IN 12" AT CENTER. BEVEL TOP CORNER AN AMOUNT EQUAL TO END BEND, TO NOTHING AT CENTER. REAM BAR TO MAKE GOOD BEARING FOR EXTRA HEAVY PIPE THIMBLE. MAKE HEEL STOP HOLES OVAL TO TAKE BOLT HEAD OVAL.

NOTE:-
NO. 1. VERTICAL ROD TO BE DRILLED BY MANUFACTURER.
OTHER VERTICAL RODS TO BE DRILLED ON ONE END IN FIELD.

NOTE:
NO. 1 ROD TO BE TYPE "M" FOR ALL WEIGHTS OF RAIL (SEE F-29)

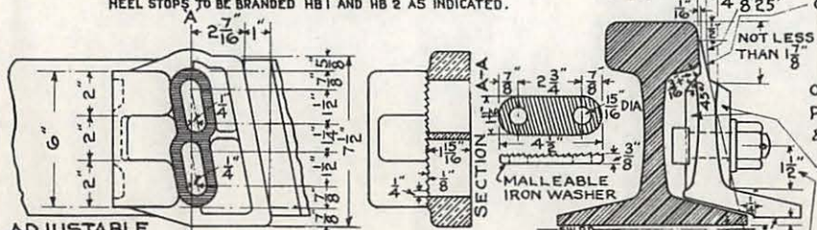


HOR. ROD Nº	N.	E
2	4'-0"	3½"
4	6'-0"	1'3"



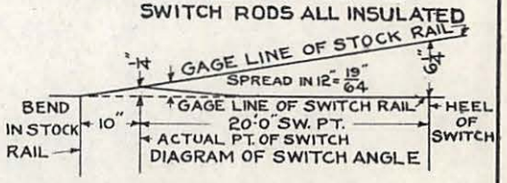
HEEL STOPS

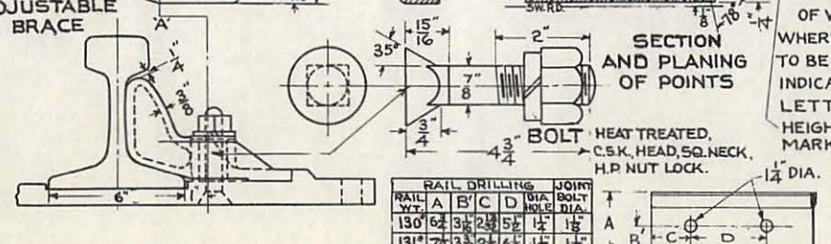
HEEL STOPS TO BE BRANDED HB 1 AND HB 2 AS INDICATED.


GAGE LINE OF STOCK RAIL
WEB FACE OF SWITCH RAIL
CHAMFER CUT:- MAKE POINT 1/16" THICK & RUN OUT IN 2'-0" FROM END OF POINT. ROUND POINT TO 1½" RAD. & GRIND TO SHARP EDGE.
NOT LESS THAN 1 7/8"
½" REINFORCING SECURED BY ¾" RIVETS IN CENTER OF WEB, EXCEPT WHERE BOLTS ARE TO BE USED AS INDICATED BY LETTERS-'A' & 'B'. HEIGHT OF BOLTS MARKED 'B'.
MALLEABLE IRON WASHER
SECTION A-A
ADJUSTABLE BRACE
SECTION AND PLANING OF POINTS
BOLT HEAT TREATED, C.S.K. HEAD, SQ. NECK, H.P. NUT LOCK.

VERT. ROD Nº	SPLIT SWITCH REGULAR PT. 130# A	130# M	131# A	131# M
3	4'-3 3/16"	3'-1 5/8"	4'-3 3/16"	3'-1 5/8"
1	4'-1 11/16"	2'-11 5/16"	4'-1 11/16"	2'-11 5/16"
*	SPRING SWITCH REGULAR PT.			
1	4'-0 3/16"	2'-10 7/16"	4'-0 3/16"	2'-10 7/16"
2	4'-0 3/16"	2'-11 5/16"	4'-0 13/16"	2'-11 5/16"
3	4'-1 7/8"	3'-0 1/8"	4'-1 7/8"	3'-0 1/8"
4	4'-2 1/8"	3'-0 3/16"	4'-2 1/8"	3'-0 3/4"

*NOTE:-SPRING SWITCHES FOR MAIN LINE USE TO BE EQUIPPED WITH TYPE "M" RODS THROUGHOUT. FOR YARD USE NO. 1. ROD TO BE TYPE "M", OR ALL IN ACCORDANCE WITH REQUIREMENTS





RAIL DRILLING RAIL WT.	A	B'	C	D	DIA HOLE	JOINT BOLT DIA.
130#	6¾	3 1/16	2½	5½	1"	1⅛"
131#	7⅛	3 5/16	2½	6½	1"	1⅛"

NOTE- SPECIAL DRILLING FOR PIPE THIMBLE HOLE.

SPRING SWITCH:- BOTH POINTS SHOULD BE REINFORCED WITH A 1¼" BAR (TO FIT RAIL)

BOSTON AND MAINE R. R.

STANDARD

20'0" SPLIT SWITCH

130 & 131 LB R.E. RAILS

APPROVED

H. F. Fifield
ENGINEER M. OF W.

C. J. Phillips
CHIEF ENGINEER

F25
A

PLAN	
DRAWN BY	P.G.
CHECKED BY	Cutt.
CORRECT	J.J.R.

ISSUE	DATE
A	4-22-30
B	3-30-36
C	12-13-45

A- GAGE PLATE HOLES IN PLATES 1A & 1
B- PLATE NOTES G.PL. AND 131# RAIL.
$\frac{15}{16}$" HOLES - PLATE 1B, 1A, 1 & G.PL.
C- PLATE #2 ELIMINATED.

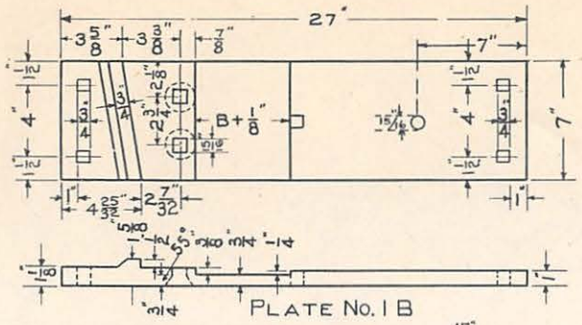


PLATE No. 1 B

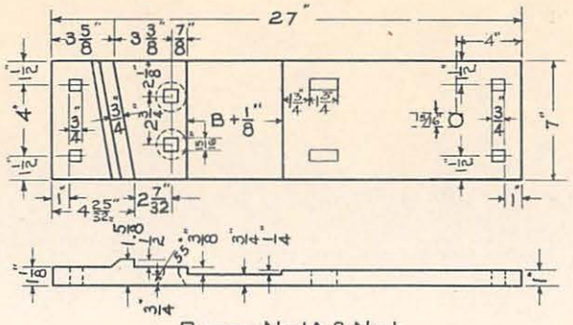


PLATE No. 1A & No. 1

NOTE: PUNCHING IN PLATES 1B, 1A & NO. 1 - $\frac{15}{16}$" ROUND INSTEAD OF $\frac{3}{4}$" SQUARE WHEN USED IN INTERLOCKING SWITCHES.

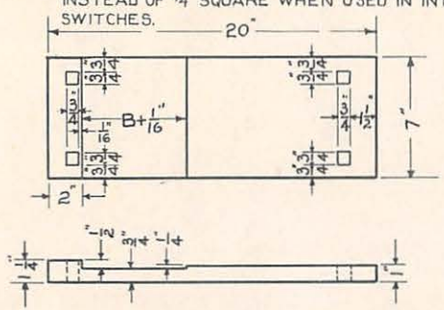


PLATE No. 3

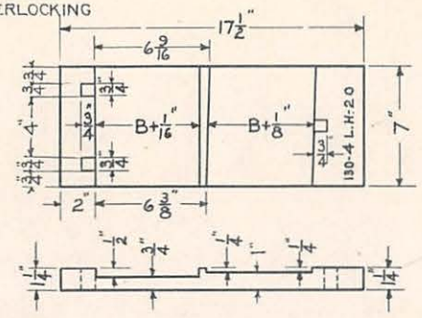
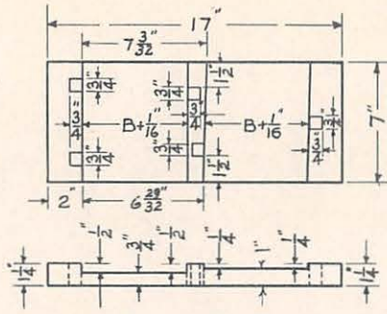


PLATE No. 4 L.H.



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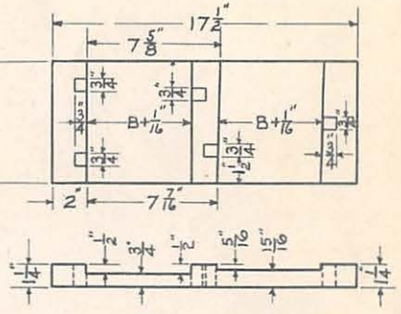

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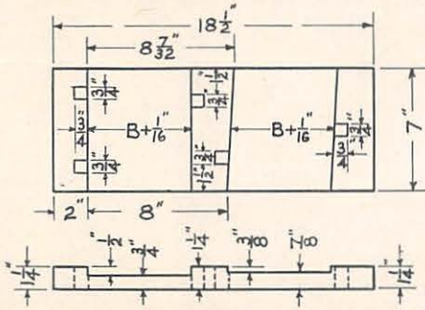


PLATE No. 7 L.H.

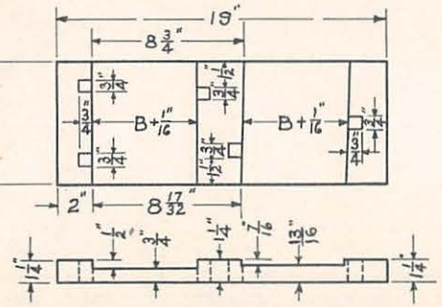


PLATE No. 8 L.H.

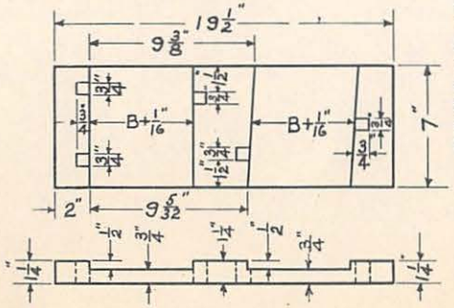
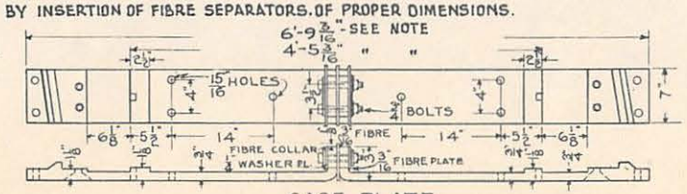


PLATE No. 9 L.H.

NOTE-
THIS DISTANCE WILL VARY DEPENDING ON WHETHER 130# OR 131# RAIL IS USED AND ALSO DUE TO VARIATION IN WIDTH OF BASE OF RAIL. THE PLATE SHOULD BE SET UP TO MEASUREMENT SHOWN, WITH A $\frac{3}{16}$" FIBRE SEPARATOR AS SHOWN. THE PLATE SHOULD THEN BE DIS-ASSEMBLED AND SHIPPED IN PAIRS, WIRED TOGETHER AND MARKED. THEY SHOULD BE RE-ASSEMBLED IN FIELD TO GIVE PROPER GAUGE BY INSERTION OF FIBRE SEPARATORS OF PROPER DIMENSIONS.



GAGE PLATE

LIST OF PLATES

PLATE No.	NUMBER REQUIRED
1B	2
1A & 1	8
3	16
4 L.H.	1
4 R.H.	1
5 L.H.	1
5 R.H.	1
6 L.H.	1
6 R.H.	1
7 L.H.	1
7 R.H.	1
8 L.H.	1
8 R.H.	1
9 L.H.	1
9 R.H.	1
TOTAL	38

NOTE:-
PLATES No 1B, No 1A, NO. 1 & GAGE PLATE TO CONFORM TO ADJUSTABLE BRACE AS PER STANDARD PLAN F25. EACH PLATE SHALL BE MARKED BY DEEPLY CUT CHARACTERS NOT LESS THAN $\frac{3}{4}$" HIGH DESIGNATING WEIGHT OF RAIL. NUMBER OF PLATE AND LENGTH OF SWITCH IN POSITION AS SHOWN ON PLATE No. 4 L.H.

RIGHT HAND PLATES ARE SAME AS LEFT HAND PLATES SHOWN EXCEPT OPPOSITE HAND.

GAGE PLATE FURNISHED ONLY WHEN SPECIFIED. OTHERWISE FURNISH 2 PLATES NO. 1B

BOSTON AND MAINE R.R.

STANDARD

SLIDE PLATES FOR 20 FT SWITCH

130 & 131 LB R.E. RAILS

APPROVED

H. F. Field
ENGINEER M. OF W.

CHIEF ENGINEER

F-26

PLAN	
Drawn By: E.M.H.	
Checked By: F.B.W.	
Correct: F.W.H.	
ISSUE	DATE
G	5-15-45
H	2-5-53
I	1-4-54
J	5-24-54

G- Redrawn & Revised
H- Ties numbered
I- Adopted M Clips to Nos. 124 Rods.
J- Added data on Spring Switch Rods.

When manganese points or Samson switches are specified - change clip to conform.

Clip Bolts 1" Dia. Std., Sq Heads, Hex. Nuts, Spring Nutlocks & Cotters.

30'-0"

Rod Bolts 1⅛" Diam. Turned Sq. Heads, Hex Nuts, & Cotters.

HB 1 HB 2

2¾" For power operated switches.

1½" For hand thrown switches.

Vertex.

Gage 4'-8½"

Switch Rod No. 1 (Vertical)

Switch Rod No. 2

Switch Rod No. 3

Switch Rod No. 4 (Vertical)

Stop No. 1

Stop No. 2

Stop No. 3

Switch Rod No. 5

Standard Joint Bar Must Not Project Beyond Base of Rail.

Spread at Heel 6¼" Sw. Angle 0° 57' 18"

Frog No.	Tie Spacing S
15	19½"
20	21"

4½" Throw

22" Power Switch.

21" — 20" — 20" — 20" — 20" — 20" — 20" — 20" — 20" — 20" — 20" — 20" — 20" — 20" — 20" — 20" — 21" — 20¾" — 18" — 5 — 5 — 5 — 5 — 5 — 5 — 5 — 5 — 5

28'-0"

Top Cut 2'-0"

Elevation Runoff in Lead Rails.

Top of Stock Rail

T-0 T-1 T-2 T-3 T-4 T-5 T-6 T-7 T-8 T-9 T-10 T-11 T-12 T-13 T-14 T-15 T-16 T-17 T-18 T-19 T-20 T-21 T-22 T-23 T-24 T-25 T-26 T-27

A A - Interlocking holes, 13/16" Dia. 2" up from base of switch rail.

Base of Stock Rail.

Elevation of Switch Point.

HB 1 HB 2

Bend Joint Bar

Pipe Thimble

Section B-B

Note:- No. 1 vertical rod to be drilled by manufacturer. Other vertical rods to be drilled on one end in field.

A Overtees

Vert. Rods

2½" × 1¼"

3" M 3"

Switch Rods

Note:- Spring switches for main line:- to be equipped with type "M" rods throughout. For yard use: No. 1 rod to be type "M", or all in accordance with requirements.

9½"

½" Steel Plate

Fibre Collar

¾" Bolts

Fibre.

Switch Rods All Insulated

Hor. Rod No.	N.	E.
2	4'-0"	3⅛"
3	4'-0"	3⅛"
5	6'-0"	1'-3"

Joint Bar - B. & M. R.R. standard or approved section. Bend joint bar ¼" in 12" at center. Bevel top corner an amount equal to end bend, to nothing at center. Ream bar to make good bearing for extra heavy pipe thimble. Make heel stop holes oval to take bolt head oval.

Stop No.	Y.
1	2⅜"
2	3 1/16"
3	4"

Hor. Rods 2- 3 & 5 1⅛" Dia.

This hole to be drilled in field.

Vert Rod	Split Switch Regular Pt.			
	Rod #1		Rod #4	
Wgt.	A	M	A	M
130#	4'-1⅝"	2'-11⅛"	4'-4"	3'-2⅛"
131#	"	"	4'-4⅛"	3'-2⅝"

Heel Stops

Heel stops to be branded HB 1 and HB 2 as indicated.

1⅛" Minimum.

Note:- No. 1 rod to be type "M" for both weights of rail (See F-29)

¾" Rivet.

Reinforced by Ribbing.

Stop

Clip

Vert Rod	Spring Switch Regular Pt.									
	Rod #1		Rod #2		Rod #3		Rod #4		Rod #5	
Wgt.	A	M	A	M	A	M	A	M	A	M
130#	4'-0 1/16"	2'-10⅛"	4'-0 9/16"	2'-10 13/16"	4'-1 9/16"	2'-11 13/16"	4'-2½"	3'-0¼"	4'-2 5/16"	3'-0 9/16"
131#	"	"	"	"	"	"	4'-2 9/16"	3'-0 13/16"	4'-2 7/16"	3'-0 11/16"

Adjustable Brace

Malleable Iron Washer

Improved Hi-Power Nut Lock

Heat Treated - C.S.K. Bolt (Head - Square Neck)

Gage Line of Stock Rail

Web Face of Switch Rail.

Chamfer Cut: Make switch point 1/16" thick and run out in 2'-0" from end of point. Round point to 1½" radius and grind to sharp edge.

½" Reinforcing - Secured by ¾" rivets in center of web, except where bolts are to be used as indicated by letters "A" & "B".

Height of bolts marked "B".

Spring switch:- both points should be reinforced with a 1¼" bar (to fit rail)

Section and Planing of Point

Gage Line of Stock Rail

Spread in 12" = 3/16"

Diagram of Switch Angle

Bend St. Rail

Actual Pt. Sw.

Heel of Switch

Rail Drilling

Rail Weight	A	B	C	D	Diam. Holes	Joint Bolt Diam.
130 LB	6¾"	3 1/16"	2¾"	5¾"	1¼"	1⅛"
131 LB	7⅛"	3 3/16"	2 1/16"	6¼"	1¼"	1⅛"

Note:- Special Drilling for Pipe Thimble Hole

Boston and Maine R. R.

Standard 30' 0" Split Switch

130 & 131 LB. R. E. Rails

Approved

H. F. Fifield
Engineer M. of W.

S. T. Phillips
Chief Engineer

PLAN	
DRAWN BY	Gust...
CHECKED BY	F.A.D.
CORRECT	J.J.R...

ISSUE	DATE
A	2-27-29
B	5-14-29
C	8-6-29
D	4-6-30
E	3-30-36
F	8-28-50

B- PLATE CHANGES
C- " "
D- GAGE PLATE. HOLES IN PLATES NO. 1A & NO. 1
E- PLATE NOTES G.PL AND 131# RAIL. $\frac{15}{16}$" HOLES - PLATES 1B-1A-1 & G.PL.
F- PLATE #2 ELIMINATED, & GAGE PLATE REVISED.

F26 A

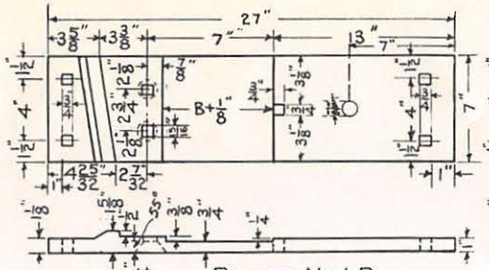


PLATE No. 1 B

NOTE.
PUNCHING AT ENDS OF PLATES 1B, 1A & NO. 1 - $\frac{15}{16}$" ROUND INSTEAD OF $\frac{3}{4}$" SQUARE WHEN USED IN INTERLOCKING SWITCHES.

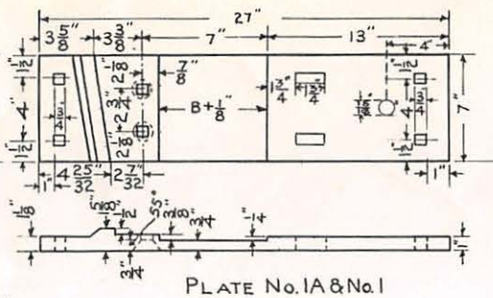


PLATE No. 1A & No. 1

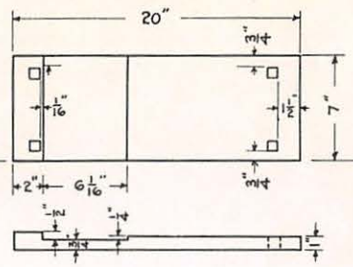


PLATE No. 3.

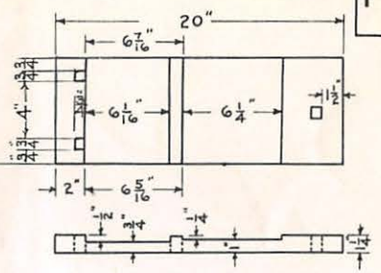


PLATE No. 4 L.H.

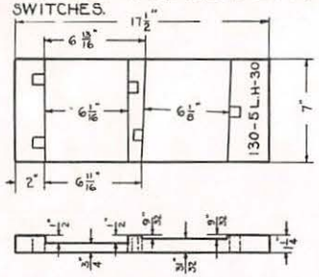


PLATE No. 5.
L.H.

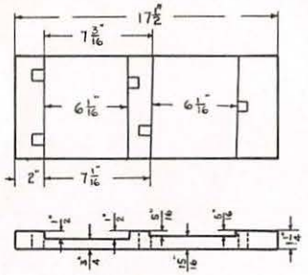


PLATE No. 6.
L.H.

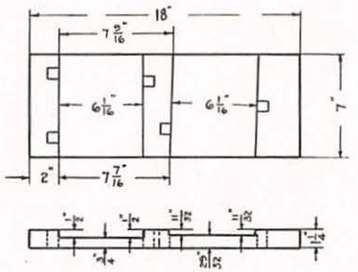


PLATE No. 7
L.H.

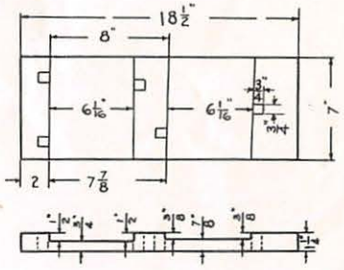


PLATE No. 8 L.H.

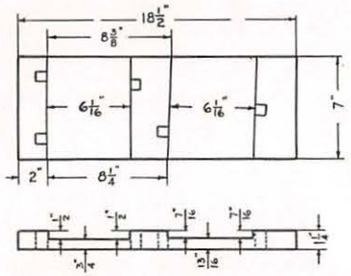


PLATE No. 9.
L.H.

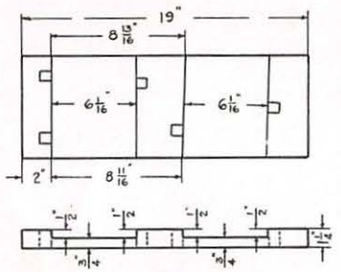


PLATE No. 10
L.H.

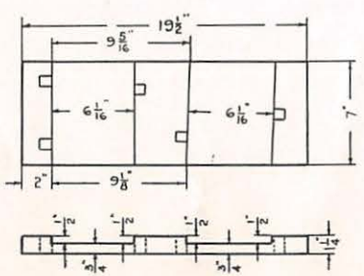


PLATE No. 11.
L.H.

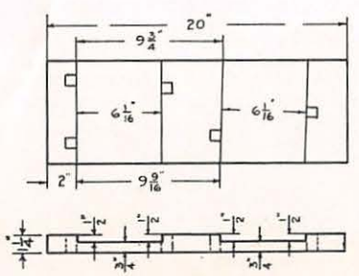


PLATE No. 12.
L.H.

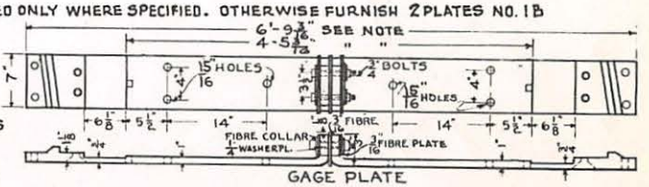
PLATE NO.	NUMBER REQUIRED
NO. 1B	2
NO 1A & NO 1 NO.	10
- 3	26
- 4 LH	1
- 4 RH	1
- 5 LH	1
- 5 RH	1
- 6 LH	1
- 6 RH	1
- 7 LH	1
- 7 RH	1
- 8 LH	1
- 8 RH	1
- 9 LH	1
- 9 RH	1
- 10 LH	1
- 10 RH	1
- 11 LH	1
- 11 RH	1
- 12 LH	1
- 12 RH	1
TOTAL	56

R.H. PLATES ARE SAME AS L.H. PLATES SHOWN EXCEPT OPPOSITE HAND

NOTE:-
THIS DISTANCE WILL VARY DEPENDING ON WHETHER 130# OR 131# RAIL IS USED, AND ALSO DUE TO VARIATION IN WIDTH OF BASE OF RAIL. THE PLATE SHOULD BE SET UP TO MEASUREMENT SHOWN, WITH A $\frac{3}{16}$" FIBRE SEPARATOR AS SHOWN.

GAGE PLATES FURNISHED ONLY WHERE SPECIFIED. OTHERWISE FURNISH 2 PLATES NO. 1B

NOTE-
PLATES 1B-1A-NO1. AND GAGE PLATE TO CONFORM TO ADJUSTABLE BRACE AS PER STANDARD PLAN F 26. EACH PLATE TO BE MARKED BY DEEPLY CUT CHARACTERS NOT LESS THAN $\frac{3}{4}$" HIGH DESIGNATING WEIGHT OF RAIL, NUMBER OF PLATE, LENGTH OF SWITCH IN POSITION AS SHOWN ON PLAN NO. 5 LH.



GAGE PLATE

BOSTON AND MAINE R. R.

STANDARD

SLIDE PLATES FOR 30 FT. SWITCH

130 & 131 LB R.E. RAILS

APPROVED

F. F. Fifield
ENGINEER M. OF W.

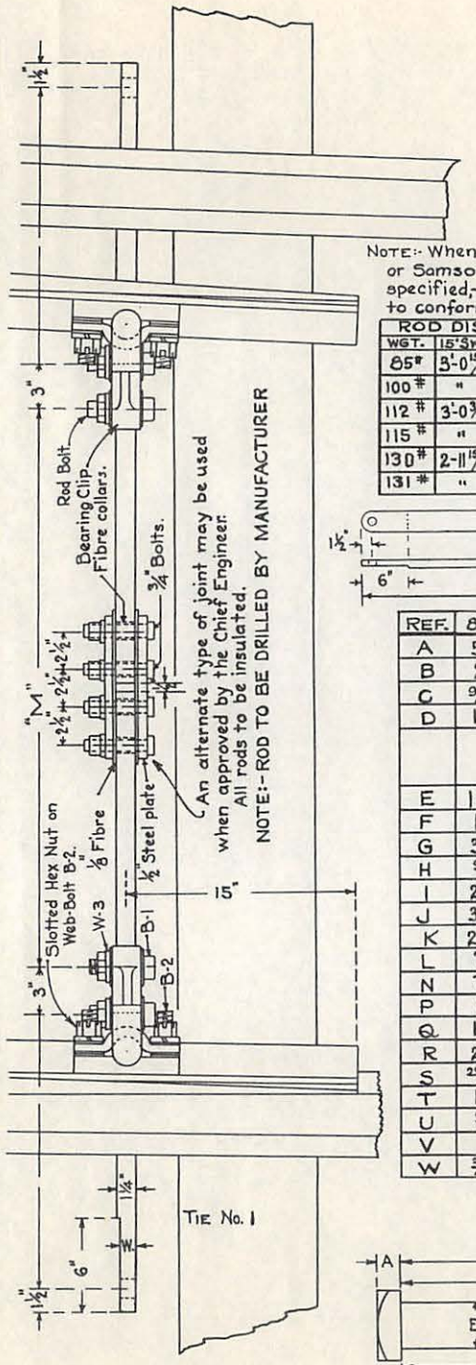
S. T. Phillips
CHIEF ENGINEER

PLAN	
DRAWN BY:- F.B.W.	
CHECKED BY:- E.M.H.	
CORRECT:- F.W.H.	
ISSUE	DATE
A	5-15-'45
B	3-5-'48
C	7-12-'54

B-115# RAIL ADDED
C-ADDED NOTE ON DRILLING REVISED "M" ROD DISTANCES ADDED DATA ON 85# WEIGHT.
REPLACED (W-2) WASHER WITH ADJUSTABLE SHIM.

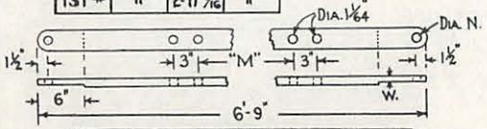
THE SIGNING OF THIS PLAN BY THE OFFICERS OF THE BOSTON AND MAINE RAILROAD DENOTES THAT THE APPLIANCE SHOWN HEREON, WHILE OF SATISFACTORY QUALITY, IS ACCEPTABLE FOR PURCHASE AND USE BY THE RAILROAD, BUT NO OTHER RESPONSIBILITY IS IMPLIED OR ASSUMED.

F-29

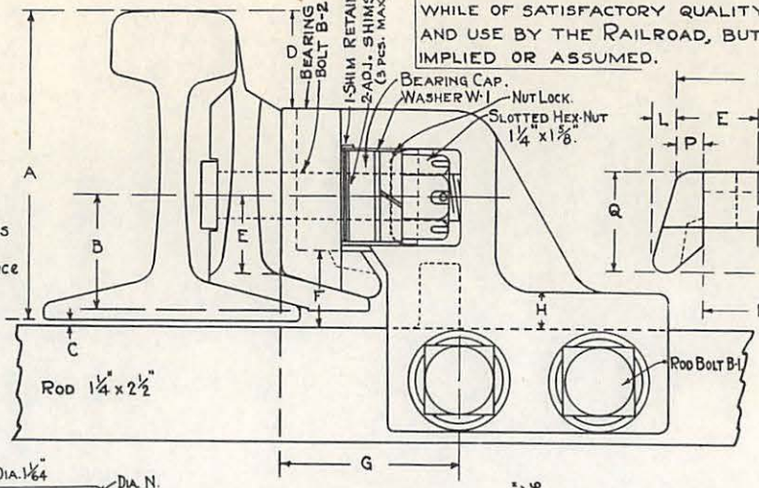


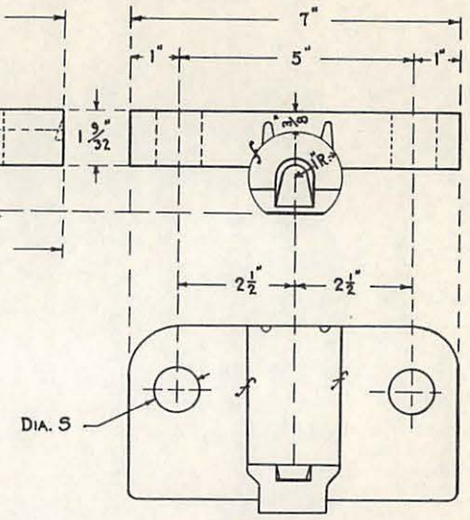
NOTE:- When manganese points or Samson switches are specified, change "M" distance to conform-

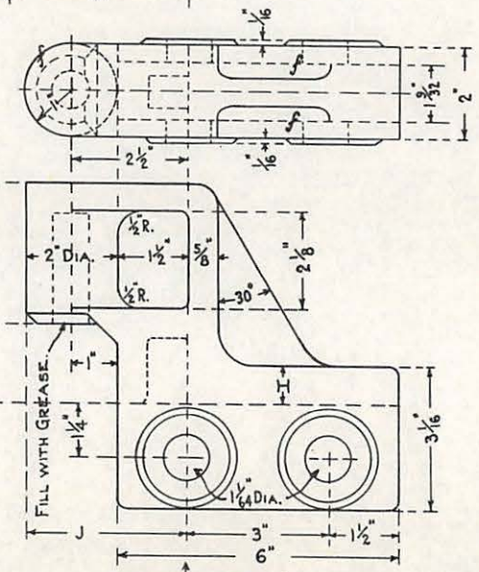
ROD DISTANCE M			
WGT.	15' SW.	20' SW.	30' SW.
85#	3'-0 15/16"	3'-0 15/16"	3'-0 7/8"
100#	"	3'-0 7/8"	"
112#	3'-0 3/16"	3'-0 1/8"	3'-0 1/8"
115#	"	"	"
130#	2'-11 15/16"	2'-11 15/16"	2'-11 7/8"
131#	"	2'-11 15/16"	"

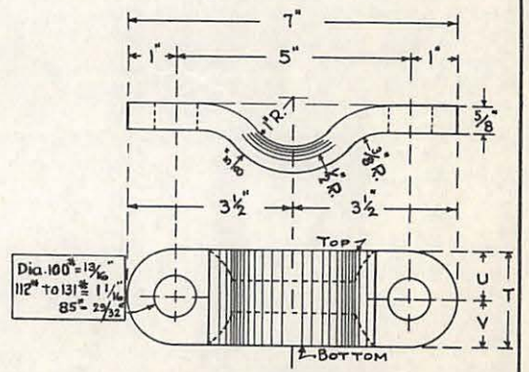


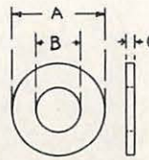
REF.	85#	100#	112# 115#	130#	131#
A	5 3/16"	6"	6 5/8"	6 3/4"	7 1/8"
B	2"	2"	2 13/32"	2 1/2"	2 1/2"
C	9/32"	1/4"	1/8"	1/16"	3/32"
D	1 25/32"	2 3/16"	2"	2 3/32"	2 1/2"
			112# TO 131#		
E	1 9/32"	1 1/4"	1 17/32"		
F	1 1/4"	1 1/4"	1 21/32"		
G	3 5/8"	3 5/8"	3 1/8"		
H	9/16"	3/16"	25/32"		
I	2 7/16"	2 7/16"	3 1/16"		
J	3 1/4"	3 1/4"	3 1/2"		
K	2 7/16"	2 7/16"	3 7/16"		
L	7/16"	7/16"	17/32"		
N	7/8"	7/8"	1 3/64"		
P	0	0	1/32"		
Q	1 3/4"	1 3/4"	2 1/8"		
R	2 7/16"	2 7/16"	3 3/32"		
S	29/32"	13/16"	1 5/32"		
T	1 3/4"	1 3/4"	2"		
U	3/4"	3/4"	13/16"		
V	1"	1"	13/16"		
W	3/4"	3/4"	1"		





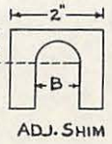




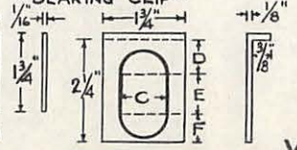


WASHERS W-1, W-3

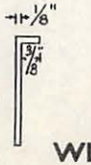
REF.	WASHER W-1 85#-100#	WASHER W-1 112# TO 131#	W-3 85#-131#
A	2"	2"	2 1/2"
B	13/16"	1 1/16"	1 1/16"
C	1/8"	1/8"	11/64"

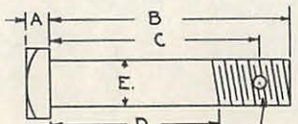


ADJ. SHIM



SHIM RETAINER





BOLTS B-1, B-2.

REF.	B-1 85#-131#	BOLT- B-2 85#	BOLT- B-2 100#	BOLT- B-2 112#-131#
A	——	3/8"	3/8"	3/8"
B	3 1/2"	4 3/4"	4 3/4"	5 1/2"
C	3 1/16"	4 3/8"	4 5/16"	5"
D	2 1/8"	——	——	——
E	1"	3/4"	3/4"	1"

ADJUSTABLE SHIM & RETAINER					
WEIGHT	A	B-C	D	E	F
85#	3/4"	15/16"	3/4"	15/16"	9/16"
112# TO 130#	7/8"	13/16"	7/8"	5/16"	1 1/16"
100#	3/4"	15/16"	3/4"	3/16"	15/16"

BOSTON & MAINE R. R.

TYPE-M-CLIPS

WITH VERTICAL NO. 1 SWITCH RODS

Approved:-

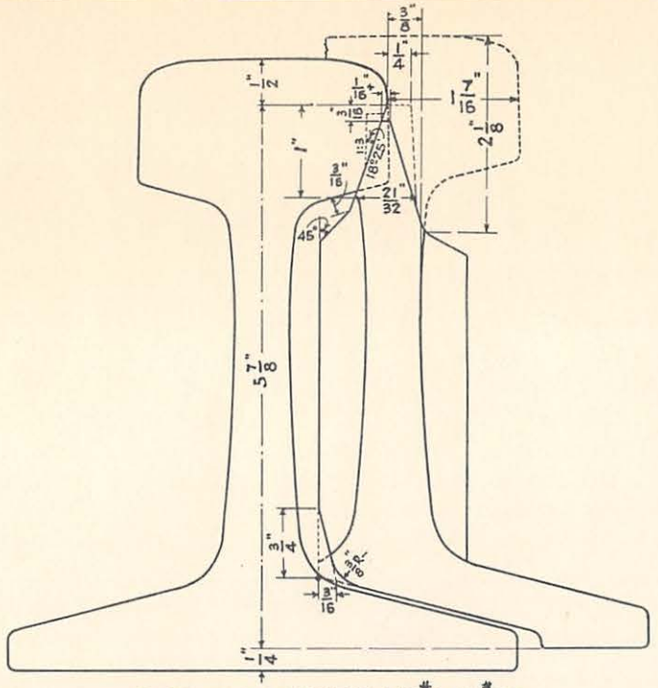
H. F. Fifield
Engineer M. of W.

S. H. Hinckley Jr.
Chief Engineer.

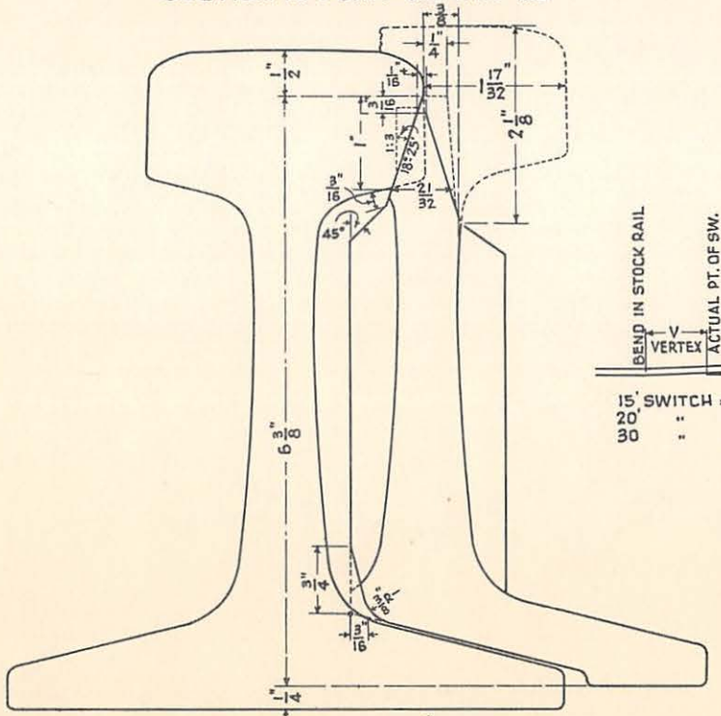
PLAN	
DRAWN H.A.R.	
CHECKED J.L.B.	
CORRECT F.W.H.	
ISSUE	DATE
A	5-16-45
B	12-29-47

B = 115# RAIL ADDED.

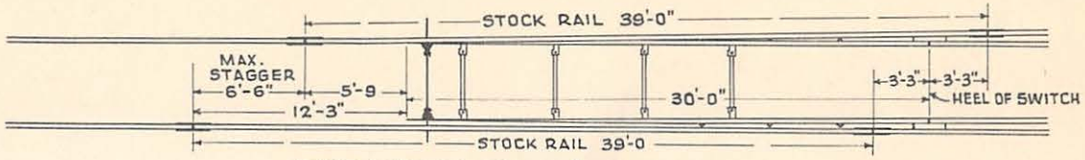
F 35



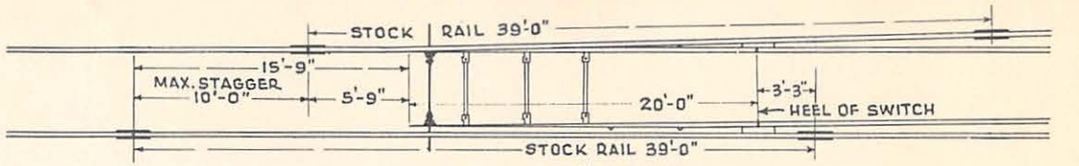
SECTION AT POINT-112# & 115# R.E.



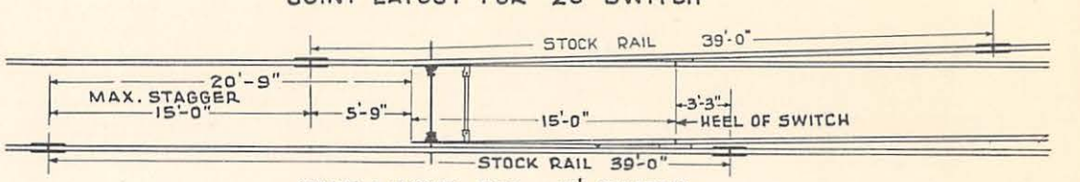
SECTION AT POINT – 131# R.E.



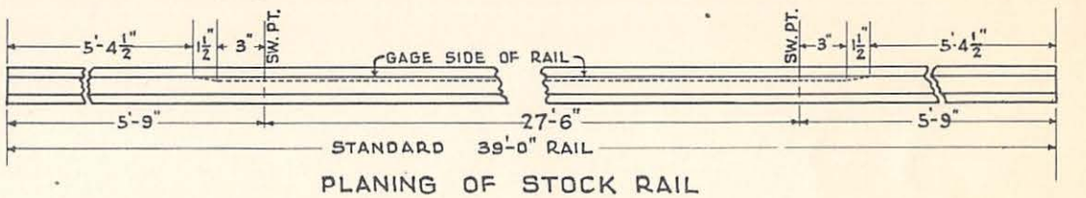
JOINT LAYOUT FOR 30' SWITCH



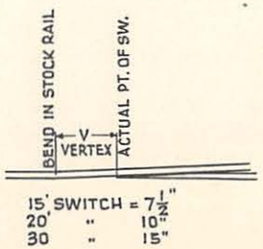
JOINT LAYOUT FOR 20' SWITCH



JOINT LAYOUT FOR 15' SWITCH



PLANING OF STOCK RAIL



15' SWITCH = 7 1/2"
20' " = 10"
30' " = 15"

NOTES:
STOCK RAILS TO BE BENT IN FIELD BY TRACK FORCES.
PLANE STOCK RAILS SO RAIL BRAND IS ON OUTSIDE OF TRACK.
UNDERCUT ON ALL STOCK RAILS TO BE FULL DEPTH FOR 3" AHEAD OF POINT, AND TAPER TO NOTHING IN 1 1/2", MAKING TOTAL CUT 4 1/2" AHEAD OF POINT.

THE SIGNING OF THIS PLAN BY THE OFFICERS OF THE BOSTON AND MAINE RAILROAD DENOTES THAT THE APPLIANCE SHOWN HEREON, WHILE OF SATISFACTORY QUALITY, IS ACCEPTABLE FOR PURCHASE AND USE BY THE RAILROAD, BUT NO OTHER RESPONSIBILITY IS IMPLIED OR ASSUMED.

BOSTON AND MAINE R.R.

PLANING FOR RACOR-SAMSON SWITCH POINT

AND 112#-115# & 131# STOCK RAILS LAYOUT OF SWITCH JOINTS

APPROVED:

H.F. Fifield
ENGINEER M. OF W.

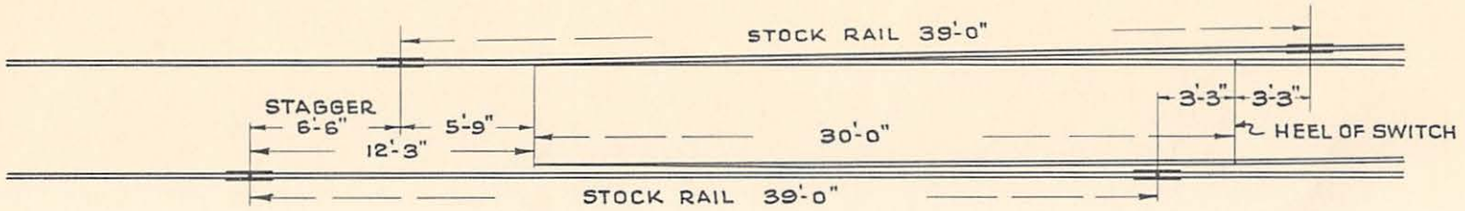
CHIEF ENGINEER

PLAN	
DRAWN	A.E.T.
CHECKED	H.A.R.
CORRECT	F.W.H

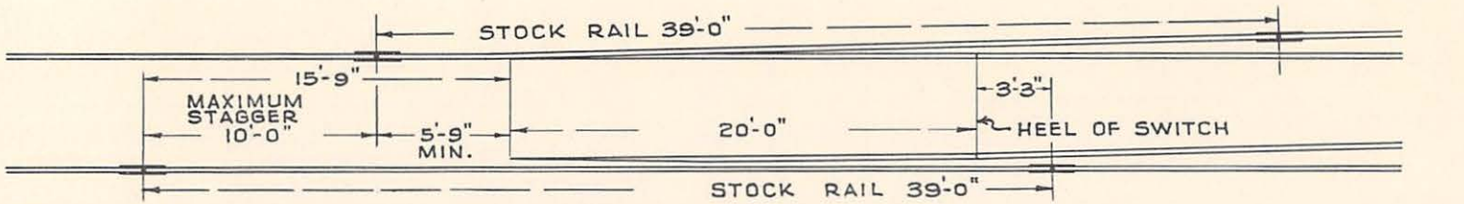
ISSUE	DATE
A	3-17-43
B	3-3-47

B - JOINT CHANGE

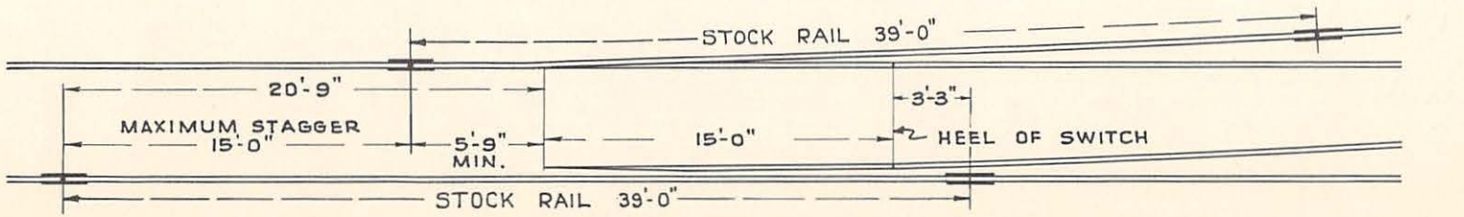
F 37



JOINT LAYOUT FOR 30' SWITCH



JOINT LAYOUT FOR 20' SWITCH



JOINT LAYOUT FOR 15' SWITCH

BOSTON AND MAINE R.R.

STANDARD METHOD OF SPACING JOINTS AHEAD OF SWITCH POINTS

APPROVED:

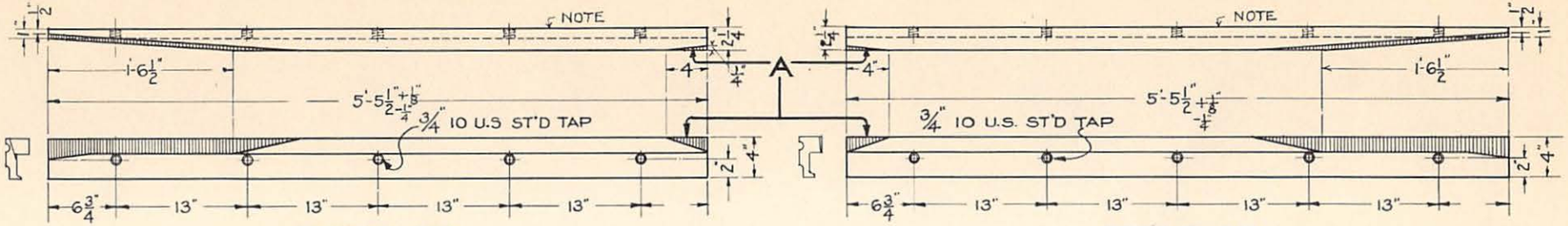
H. F. Fifield
ENGINEER M. OF W.

CHIEF ENGINEER

PLAN	
DRAWN BY E.R.M	
CHECKED BY A.S.M	
CORRECT J.J.R	
ISSUE	DATE
A	2-1-39

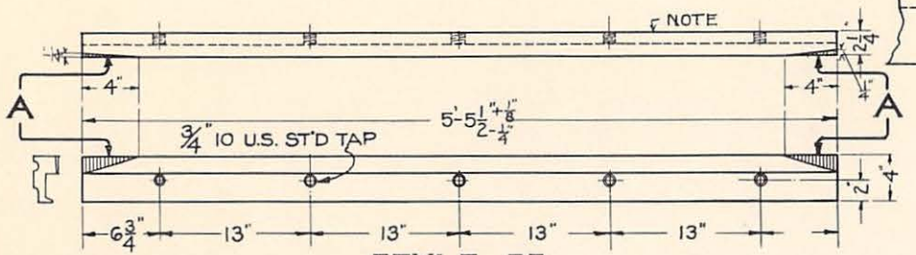
F 58

NOTE
BACK MUST BE FREE FROM HUMPS OR BURRS WHICH WOULD PREVENT SHOE FROM LAYING FLAT ON HOLDER.

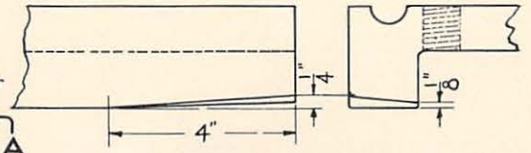


STYLE 36
L.H.

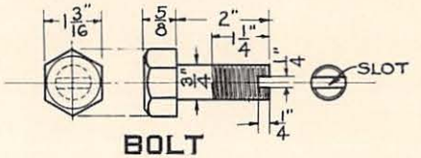
STYLE 37
R.H.



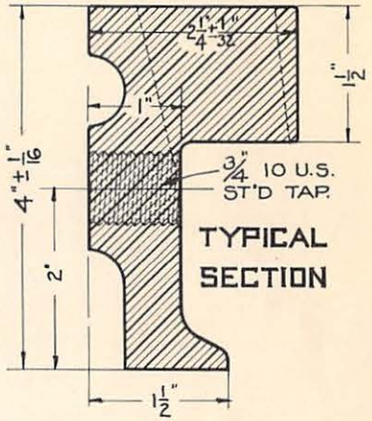
STYLE 35



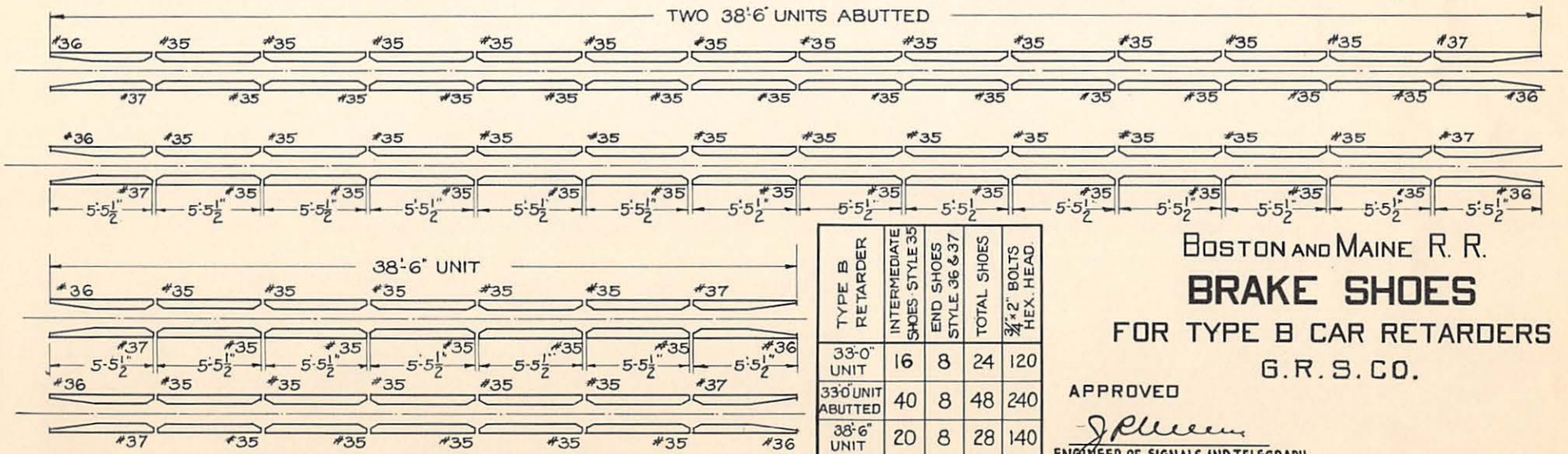
DETAIL AT AA



BOLT



TYPICAL SECTION



ARRANGEMENT OF BRAKE SHOES

TYPE B RETARDER	INTERMEDIATE SHOES STYLE 35	END SHOES STYLE 36 & 37	TOTAL SHOES	¾"×2" BOLTS HEX. HEAD
33'-0" UNIT	16	8	24	120
33'-0" UNIT ABUTTED	40	8	48	240
38'-6" UNIT	20	8	28	140
38'-6" UNIT ABUTTED	48	8	56	280

BOSTON AND MAINE R. R.

BRAKE SHOES

FOR TYPE B CAR RETARDERS

G.R.S. CO.

APPROVED

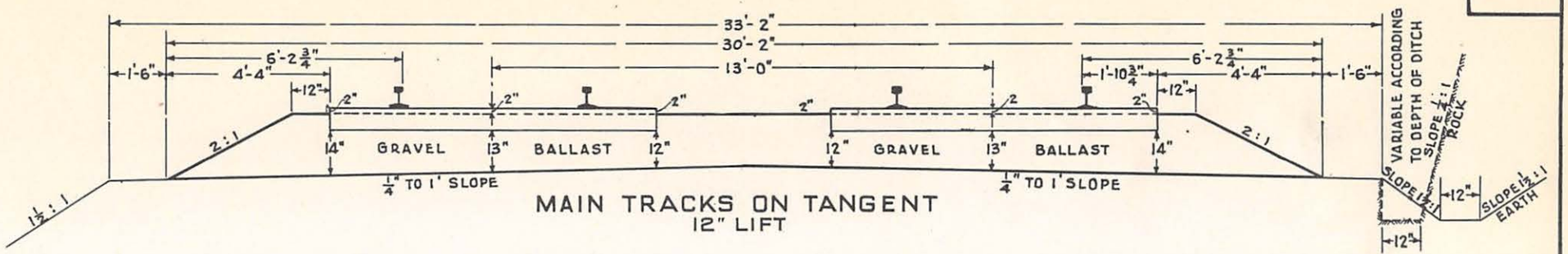
ENGINEER OF SIGNALS AND TELEGRAPH

ENGINEER M. OF W.

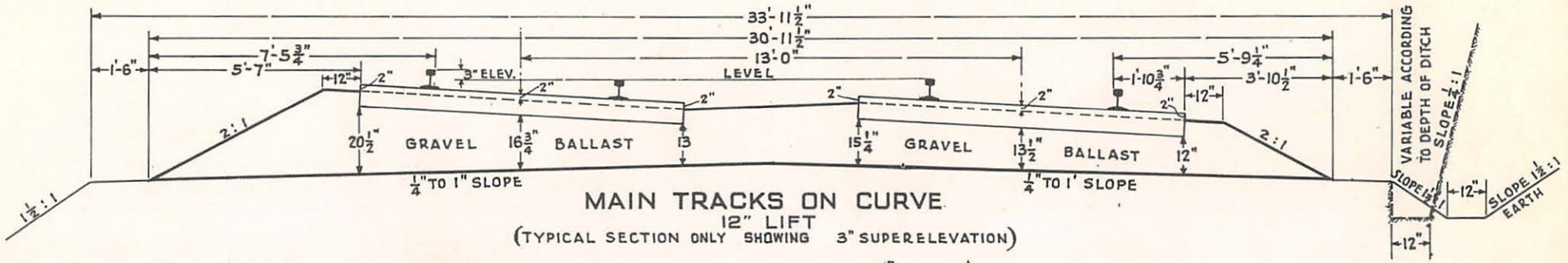
CHIEF ENGINEER

PLAN	
DRAWN BY H.A.R.	
CHECKED AuH.	
CORRECT JHH	
ISSUE	DATE
A	6-15-42

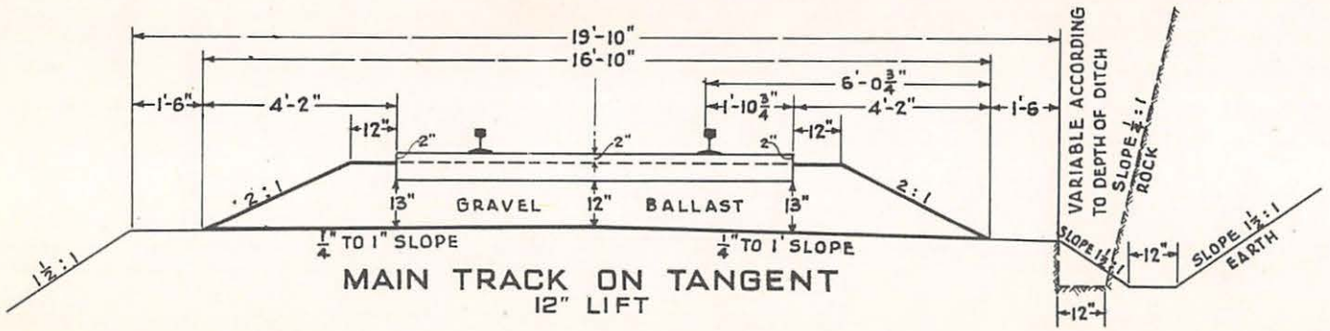
G-4



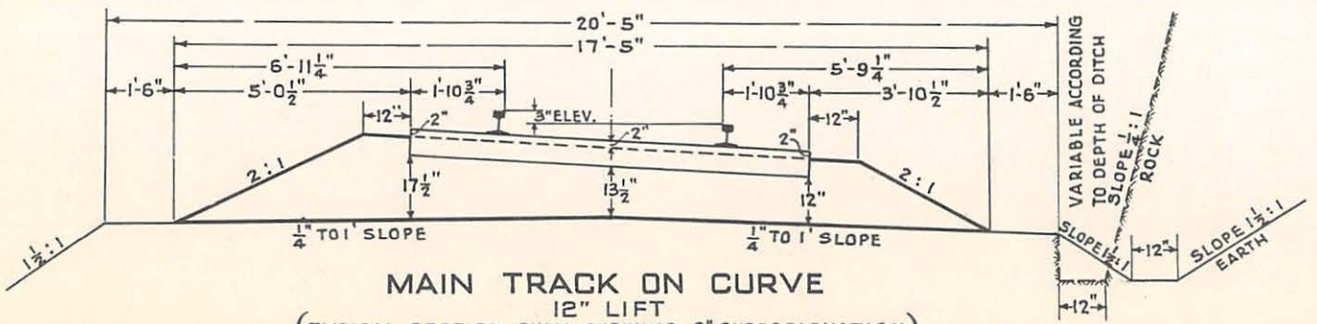
MAIN TRACKS ON TANGENT
12" LIFT



MAIN TRACKS ON CURVE
12" LIFT
(TYPICAL SECTION ONLY SHOWING 3" SUPERELEVATION)



MAIN TRACK ON TANGENT
12" LIFT



MAIN TRACK ON CURVE
12" LIFT
(TYPICAL SECTION ONLY SHOWING 3" SUPERELEVATION)

BOSTON AND MAINE R. R.
STANDARD
BALLAST SECTIONS
GRAVEL

APPROVED:

H. F. Field
ENGINEER M. OF W.

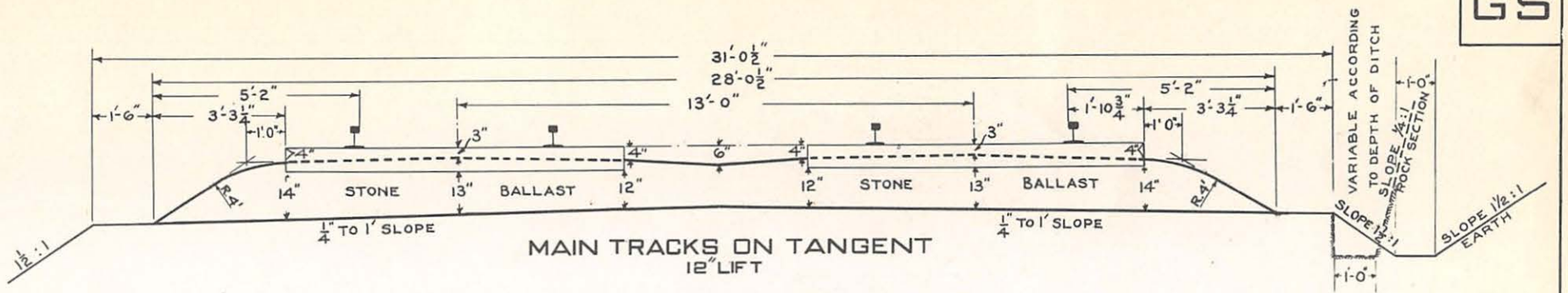
CHIEF ENGINEER

PLAN	
DRAWN BY P.L.D.	
CHECKED BY E.H.	
CORRECT J.J.R.	
ISSUE	DATE
A	4-22-29
B	11-20-29
C	6-15-42

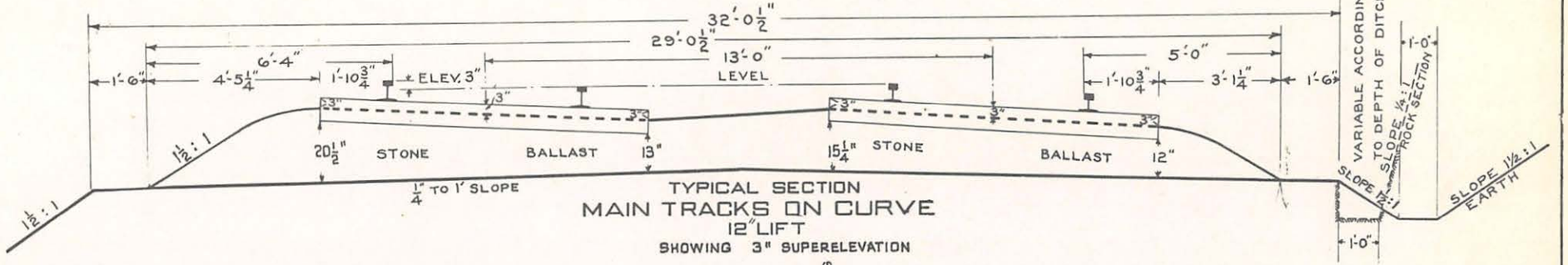
B- SIDE SLOPES ADDED

C CURVED TRACK REVISION

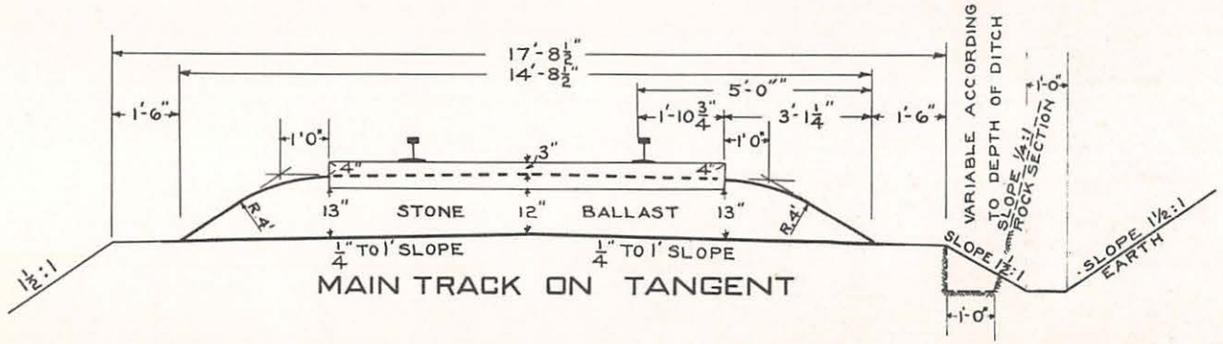
G5



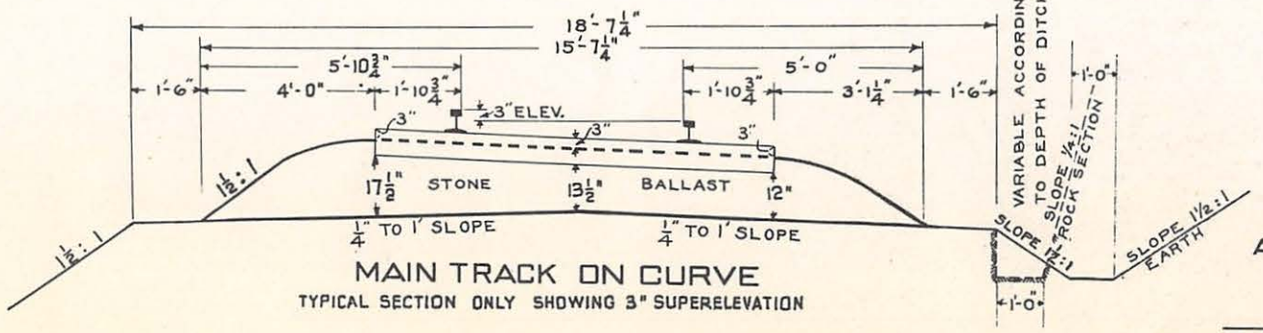
MAIN TRACKS ON TANGENT
12" LIFT



TYPICAL SECTION
MAIN TRACKS ON CURVE
12" LIFT
SHOWING 3" SUPERELEVATION



MAIN TRACK ON TANGENT



MAIN TRACK ON CURVE
TYPICAL SECTION ONLY SHOWING 3" SUPERELEVATION

BOSTON & MAINE R. R.
STANDARD
BALLAST SECTIONS
STONE

Approved

H. F. Fifield
Engineer M. of W.

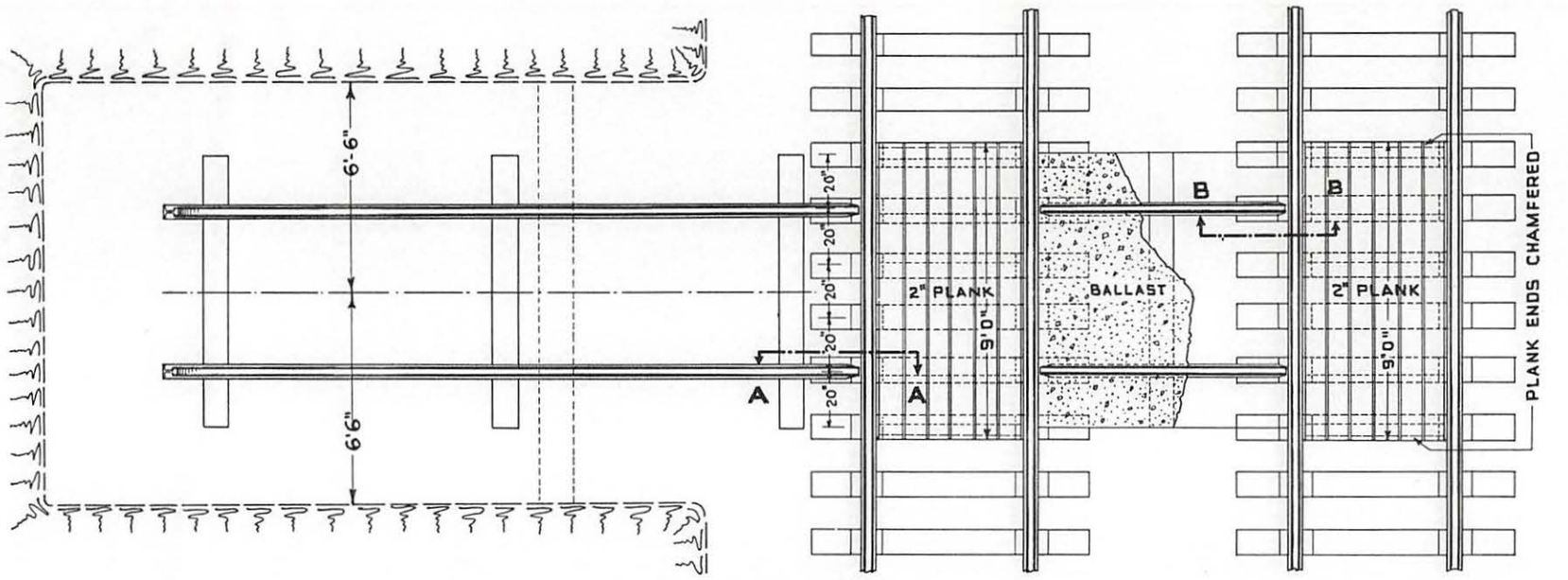
Chief Engineer

PLAN	
DRAWN	R·B·H
CHECKED	T.P.P.
CORRECT	J.J.R.

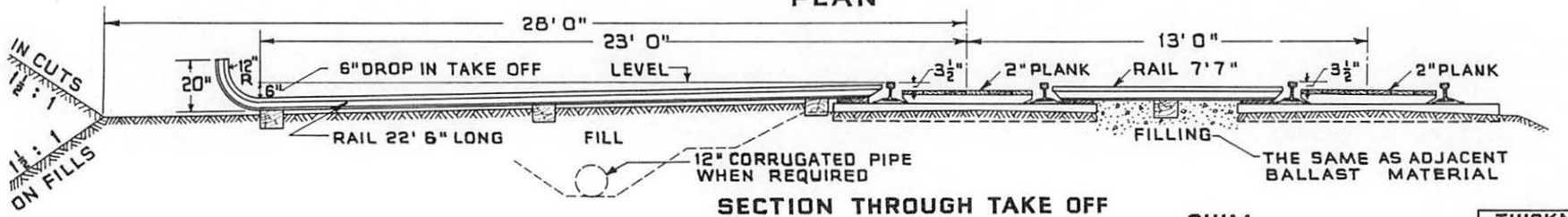
ISSUE	DATE
A	12-16-31
B	4-22-36
C	12-22-50

B-112# & 131# RAIL NOTES
C-NOTE: TIMBER TREATING REV.

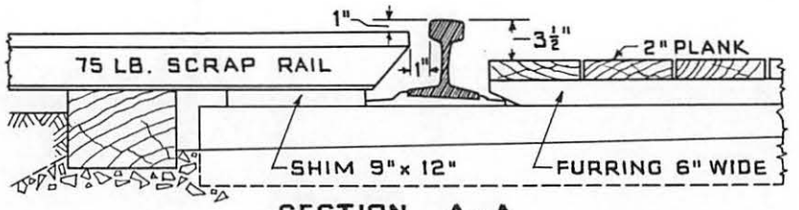
G-10



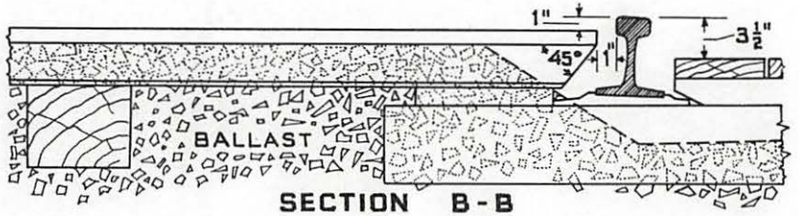
PLAN



SECTION THROUGH TAKE OFF



SECTION A-A

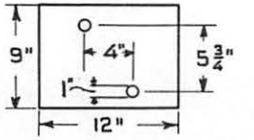


SECTION B-B

BILL OF MATERIAL
2 RAILS 22'-6" LONG
2 RAILS 7'-7" MAY VARY
4 TIES
12 PCS. PLANK-9'-0"x 8"x 2"
10 PCS. FURRING 4'-4" LG. 6" W.
1 1/2 YDS. BALLAST
6 SHIMS 9"x 12"

NOTE:- ALL TIMBER AS ABOVE TO HAVE CREOSOTE TREATMENT.

SHIM BORING



	THICKNESS OF SHIMS - FURRING	
85# RAIL	0	1/4"
100#	3/4"	1 1/4"
112#	1 1/4"	1 3/4"
130#	1 1/2"	2"
131#	1 3/4"	2 1/4"

BOSTON AND MAINE R.R.

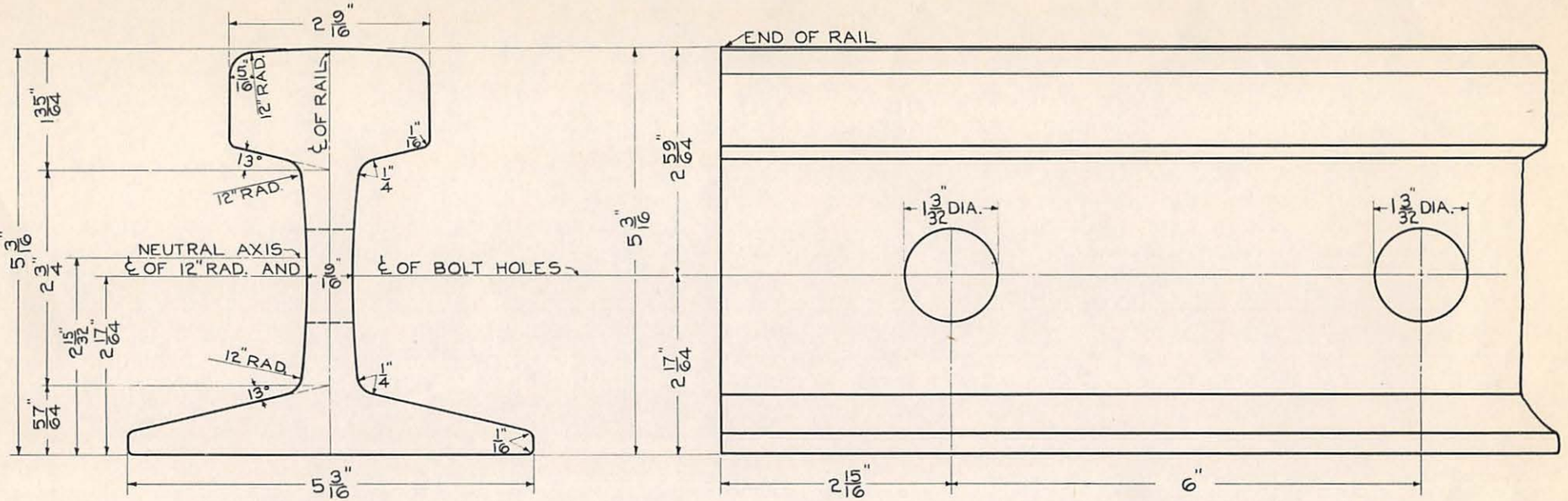
STANDARD SECTION MOTOR CAR SET OFF

APPROVED
H. F. Fifield
ENGINEER M. OF W.

CHIEF ENGINEER

PLAN	
DRAWN: A.S.M.	
CHECKED: E.R.M	
CORRECT: J.J.R.	
ISSUE	DATE
A	8-19-31

H I



SECTION

DRILLING DIAGRAM

MATHEMATICAL PROPERTIES

AREA	SQUARE INCHES	PER CENT
HEAD	3.50	41.9
WEB	1.75	21.2
BASE	3.09	36.9
TOTAL	8.34	100.0
MOMENT OF INERTIA	30.10	
SEC. MOD. OF HEAD	11.18	
SEC. MOD. OF BASE	12.02	
RATIO M. I. TO AREA	3.61	
RATIO SEC. MOD. TO AREA	1.34	
RATIO HEIGHT TO BASE	1.00	
RATIO BASE TO HEIGHT	1.00	

BOSTON AND MAINE R. R.

STANDARD
85 LB. RAIL
A. S. C. E. SECTION

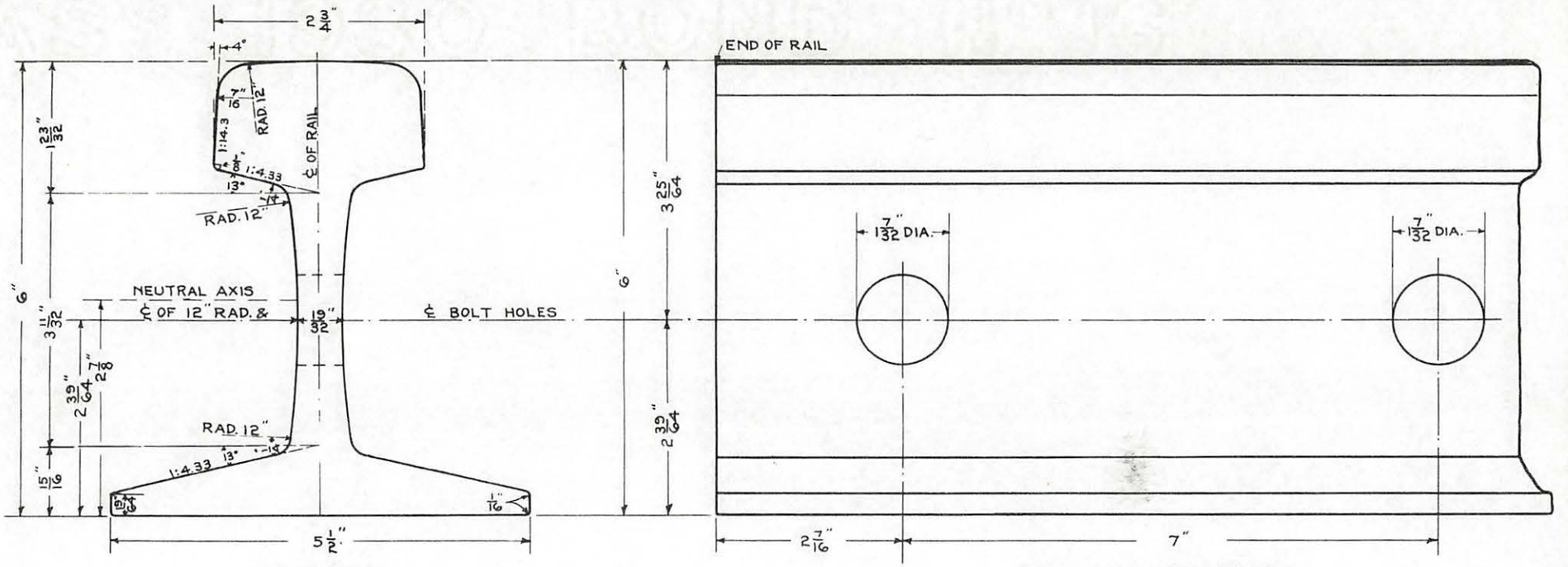
APPROVED

ENGINEER, M. OF W.

CHIEF ENGINEER

PLAN	
DRAWN P.L.D.	
CHECKED R.W.S.	
CORRECT. J.J.R.	
ISSUE	DATE
A	10-5-'29

H2



SECTION

DRILLING DIAGRAM

MATHEMATICAL PROPERTIES

AREA	SQUARE INCHES	PER CENT
HEAD	4.04	41.4
WEB	2.33	23.8
BASE	3.40	34.8
TOTAL	9.77	100.0

MOMENT OF INERTIA	47.18
SEC. MOD. OF HEAD	15.10
SEC. MOD. OF BASE	16.41
RATIO M. I. TO AREA	4.83
" SEC. MOD. TO AREA	1.55
" HEIGHT TO BASE	1.09
" BASE TO HEIGHT	0.92

BOSTON & MAINE R. R.

STANDARD 100 LB. RAIL

N.H. SECTION

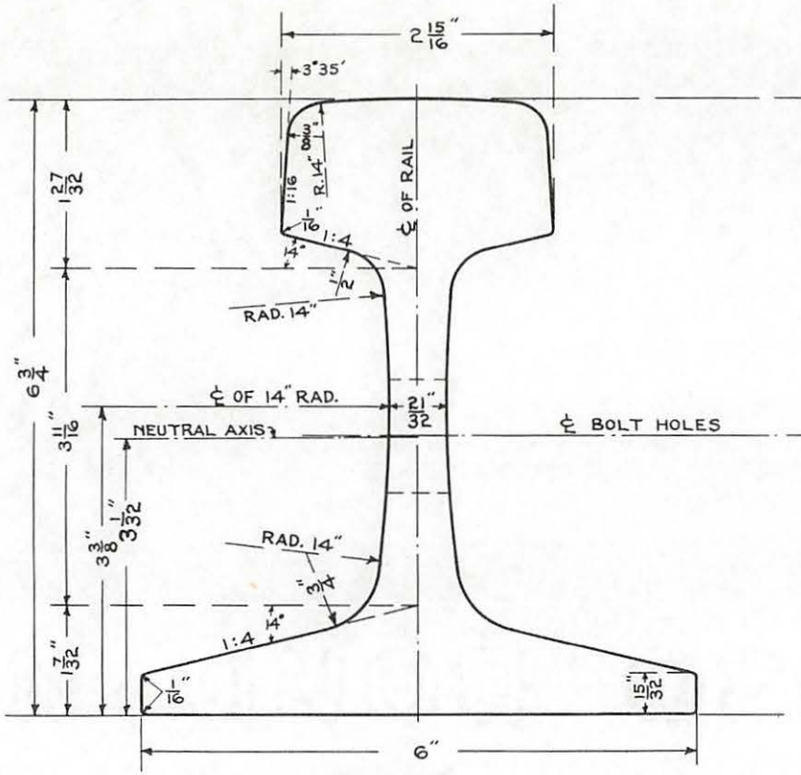
Approved

F. F. Fitzsimmons
Engineer M. of W.

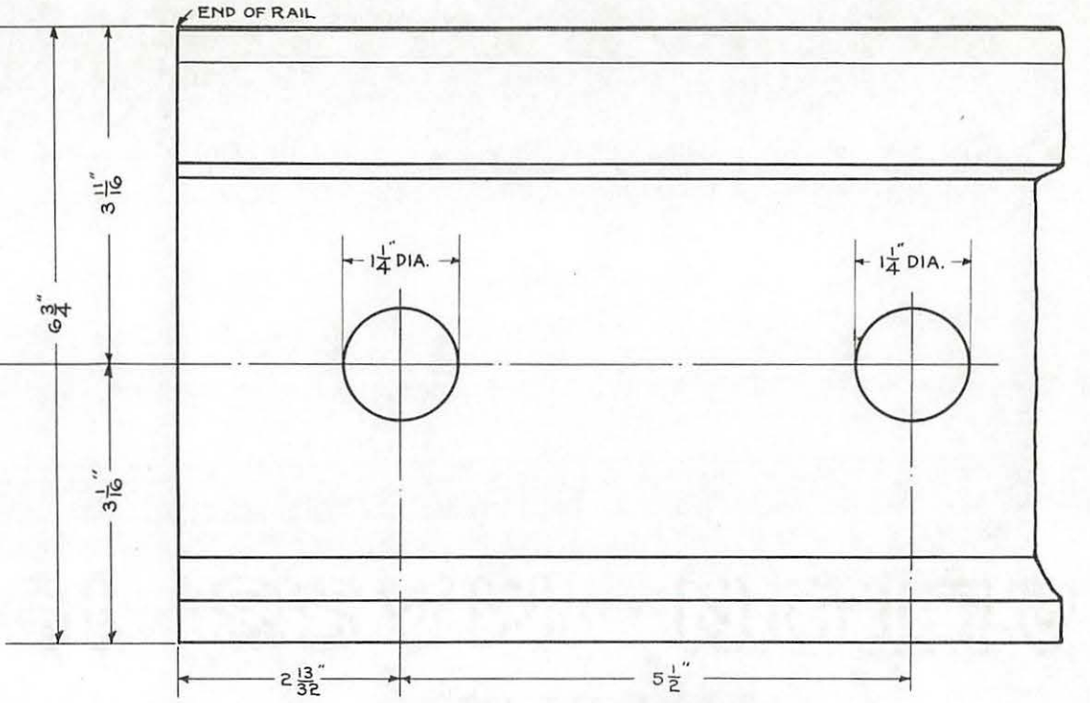
A. A. Backus
Chief Engineer

PLAN	
DRAWN P.L.D.	
CHECKED R.W.S.	
CORRECT J.J.R.	
ISSUE	DATE
A	2-8-29

H 3



SECTION



DRILLING DIAGRAM

MATHEMATICAL PROPERTIES

AREA	SQUARE INCHES	PER CENT
HEAD	4.63	36.4
WEB	3.02	23.8
BASE	5.06	39.8
TOTAL	12.71	100.0

MOMENT OF INERTIA	77.4
SEC. MOD. OF HEAD	20.8
SEC. MOD. OF BASE	25.6
RATIO M. I. TO AREA	6.09
" SEC. MOD. TO AREA	1.64
" HEIGHT TO BASE	1.13
" BASE TO HEIGHT	0.89

BOSTON & MAINE R. R.

STANDARD 130 LB. RAIL

A.R.E.A. SECTION

Approved

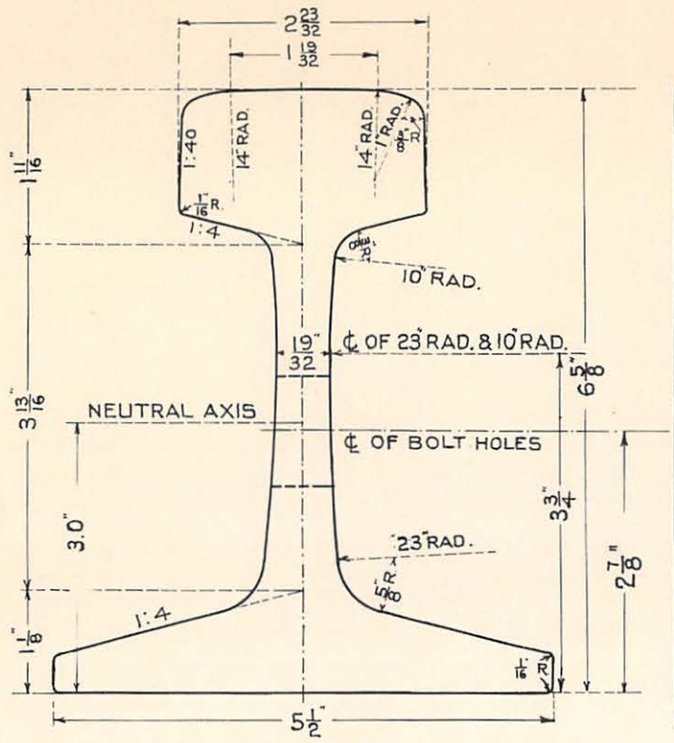
F. F. Fitzgerald
Engineer M. of W.

A. W. Backus
Chief Engineer

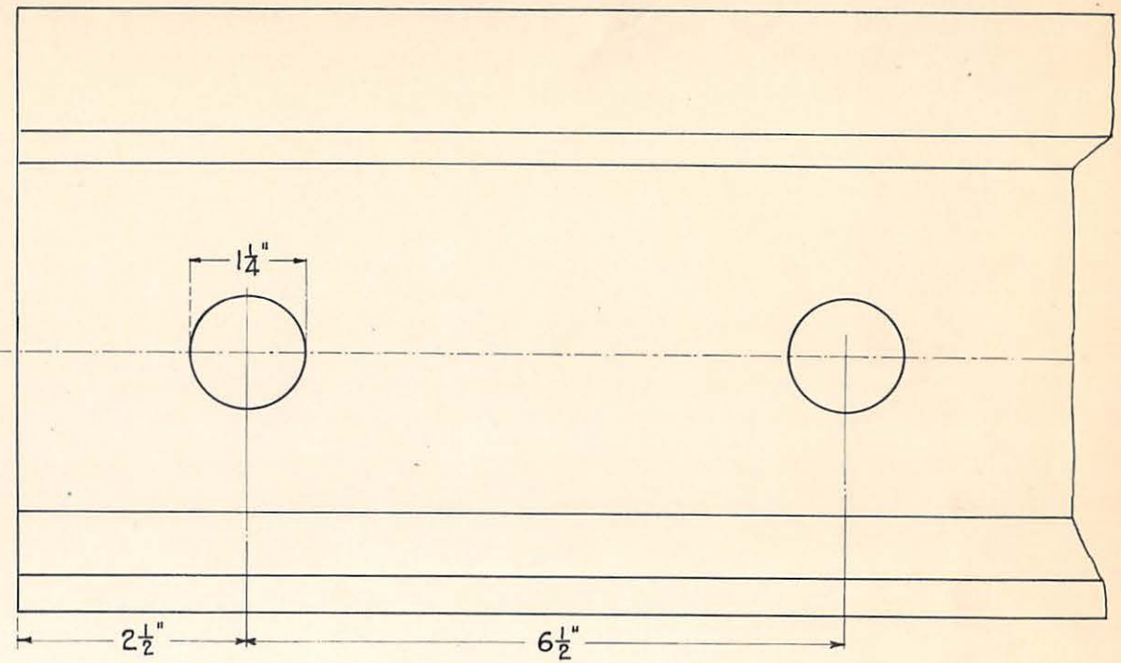
PLAN	
DRAWN BY J.L.B	
CHECKED E.M.H.	
CORRECT J.J.R.	
ISSUE	DATE
A	3-20-34
B	11-1-37

B CHANGE IN HEAD RAD.

H4



SECTION



DRILLING

MATHEMATICAL PROPERTIES

AREA	SQUARE INCHES	PER. CENT
HEAD	3.95	35.9
WEB	2.77	25.1
BASE	4.29	39.0
TOTAL	11.01	100.0

MOMENT OF INERTIA	65.5
SECTION MODULUS, HEAD	18.1
" " , BASE	21.8
RATIO M.I. TO AREA	5.9
RATIO SEC. MOD. TO AREA	1.6
RATIO HEIGHT TO BASE	1.20
RATIO BASE TO HEIGHT	0.83

BOSTON AND MAINE R.R.

STANDARD

112 LB. RAIL

R.E. SECTION

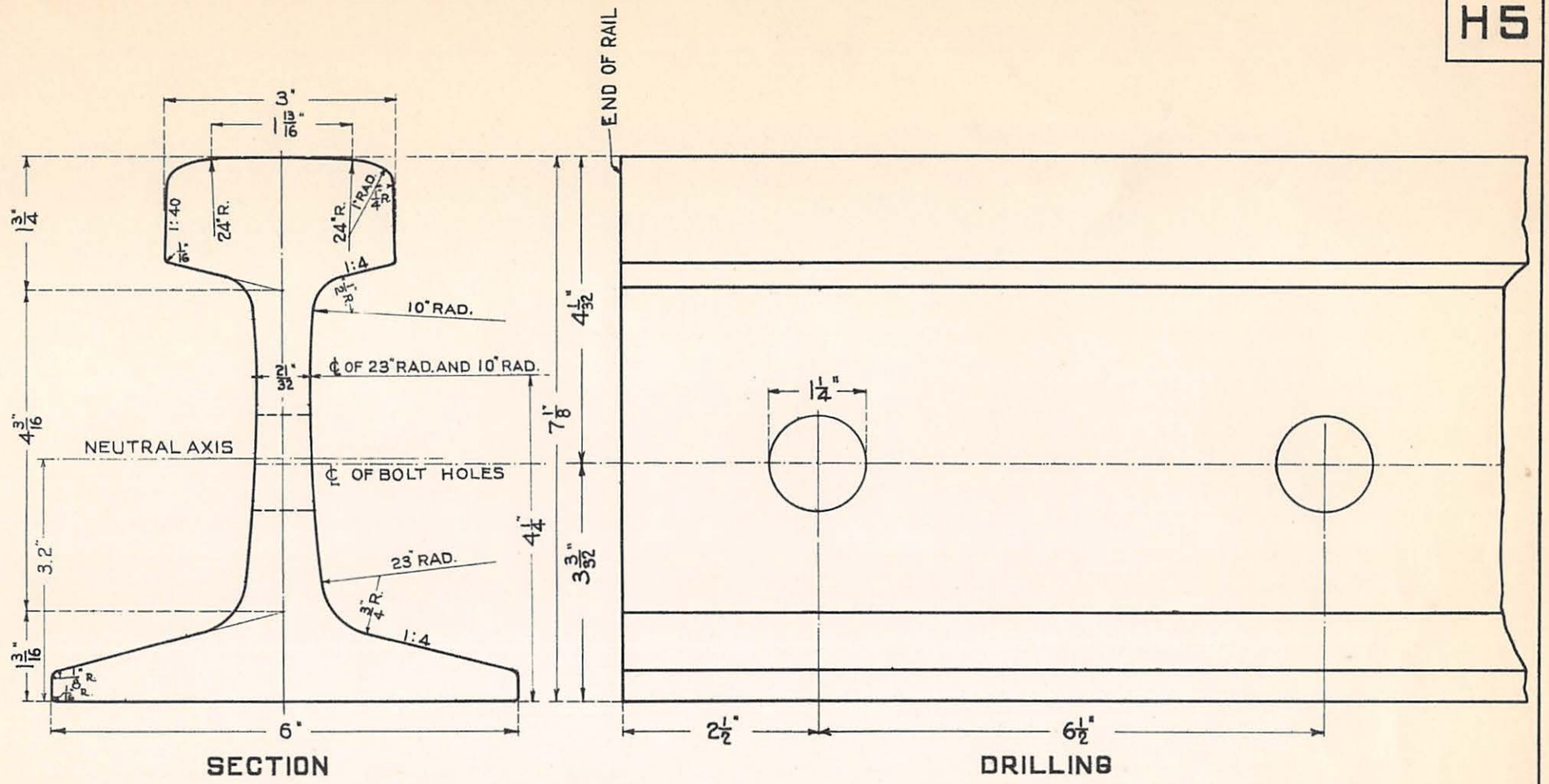
APPROVED

H.F. Fifield
ENGINEER M. OF W.

A.H. Morrill
CHIEF ENGINEER

PLAN	
DRAWN J.L.B.	
CHECKED E.M.H	
CORRECT. J.J.R	
ISSUE	DATE.
A	3-20-34

H5



SECTION

DRILLING

MATHEMATICAL PROPERTIES.

AREA	SQUARE INCHES	PER CENT.
HEAD	4.57	35.0
WEB	3.43	27.0
BASE	4.86	38.0
TOTAL	12.86	100.0

MOMENT OF INERTIA	89
SEC. MOD. OF HEAD	23
SEC. MOD. OF BASE	27
RATIO M. I. TO AREA	7
" SEC. MOD. TO AREA	2
" HEIGHT TO BASE.	1.19
" BASE TO HEIGHT	0.84

BOSTON AND MAINE R. R.

STANDARD 131 LB. RAIL

R.E. SECTION

APPROVED

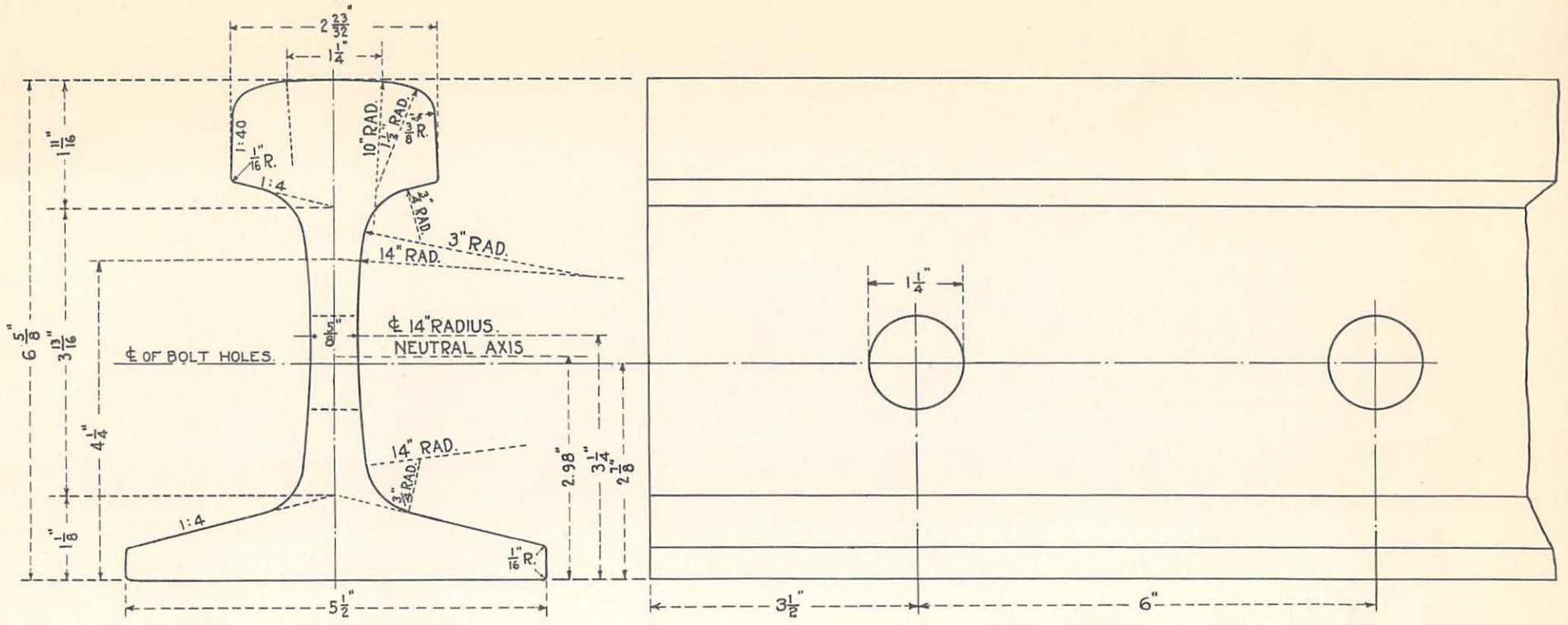
H. F. Fifield
ENGINEER M. OF W.

CHIEF ENGINEER.

PLAN	
DRAWN BY F.B.W.	
CHECKED E.M.H.	
CORRECT F.W.H.	
ISSUE	DATE
A	2-19-1947
B	12-15-47

B - A.R.E.A. DRILLING

H6



SECTION

DRILLING

MATHEMATICAL PROPERTIES

AREA	SQUARE INCHES	PER CENT
HEAD	3.91	34.8
WEB	3.05	27.1
BASE	4.29	38.1
TOTAL	11.25	100.0

MOMENT OF INERTIA	65.6
SECTION MODULUS, HEAD	18.0
" " , BASE	22.0
RATIO M.I. TO AREA	5.8
RATIO SEC. MOD. TO AREA	1.6
RATIO HEIGHT TO BASE	1.20
RATIO BASE TO HEIGHT	0.83

BOSTON AND MAINE R.R.

STANDARD
115 LB. RAIL
R.E. SECTION

APPROVED

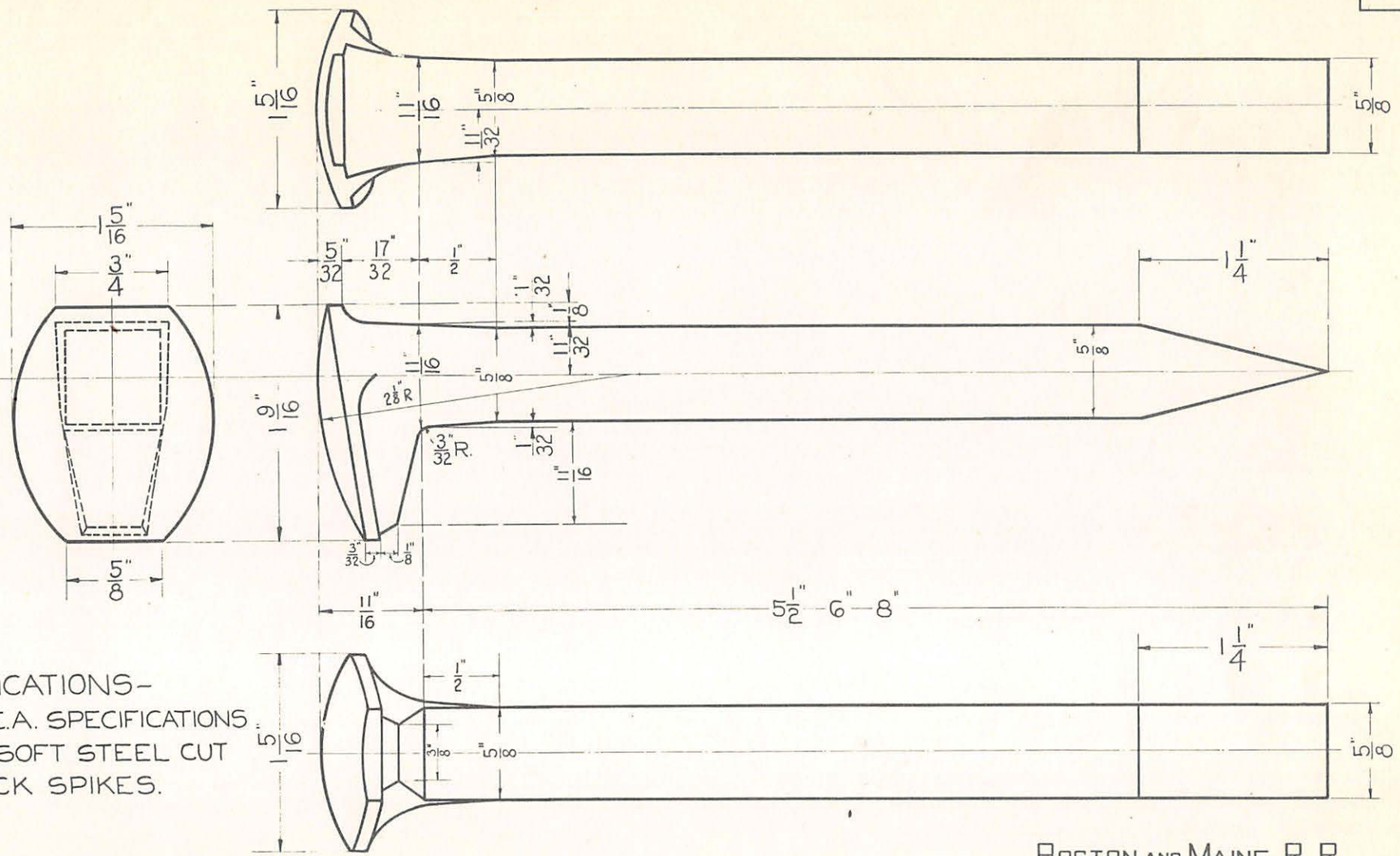
H. F. Figured
ENGINEER M. OF W.

CHIEF ENGINEER

PLAN	
DRAWN: E.R.M.	
CHECKED: R.W.H.	
CORRECT: J.J.R.	
ISSUE	DATE
A	2-11-31
B	3-14-42

B-A.R.E.A. DESIGN

H 7



SPECIFICATIONS–

A.R.E.A. SPECIFICATIONS FOR SOFT STEEL CUT TRACK SPIKES.

SPIKE DATA

NAME	SIZE	WEIGHT APPROX.	NO. PER 200# KEG APPROX.
TRACK	$5\frac{1}{2}" \times \frac{5}{8}"$	.77#	260
TRACK	$6" \times \frac{5}{8}"$	.83#	240
SHIM	$8" \times \frac{5}{8}"$	1.05#	190

BOSTON AND MAINE R. R.

STANDARD

CUT TRACK SPIKE

APPROVED

H J Fyfield
ENGINEER M. OF W.

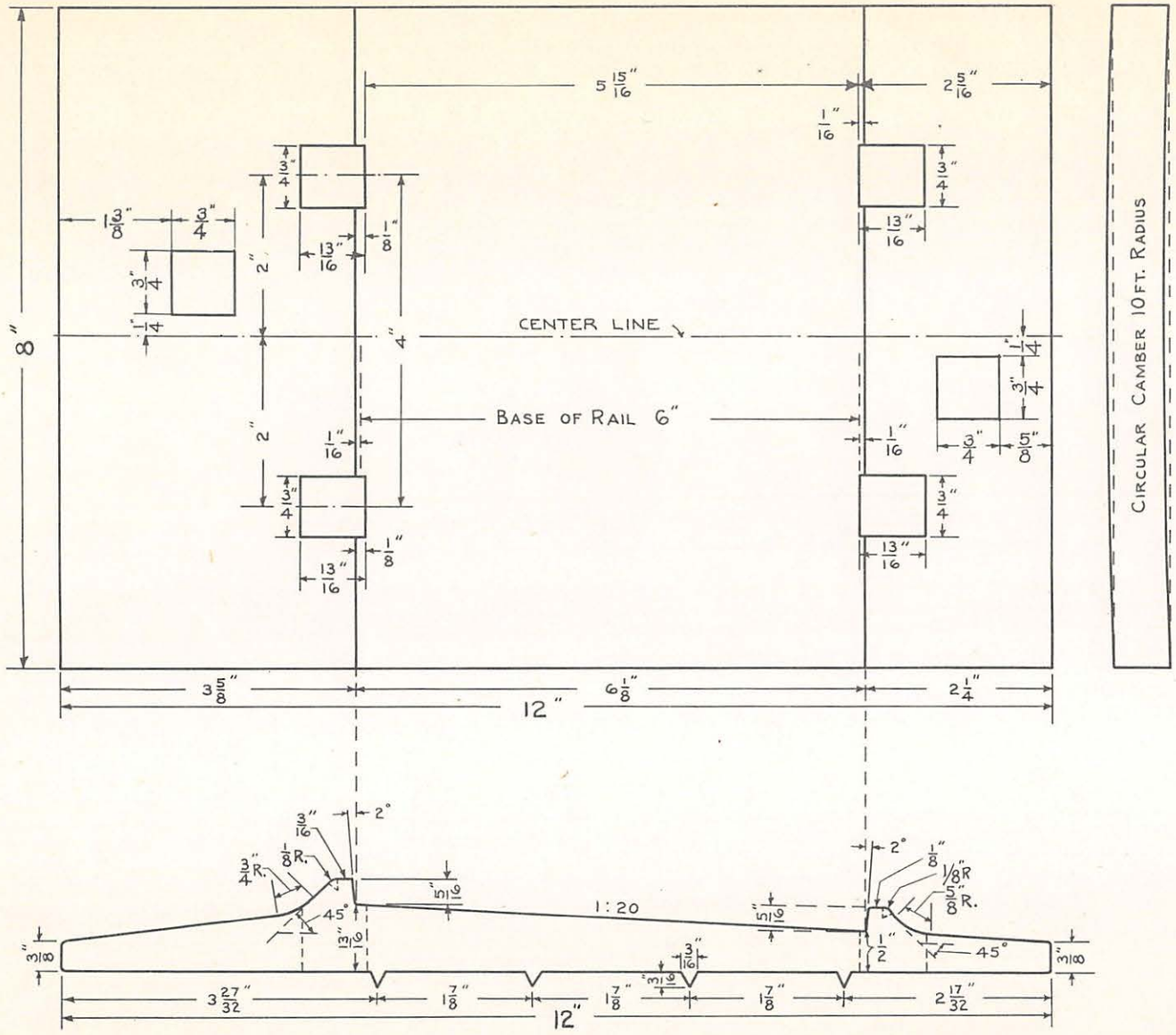
CHIEF ENGINEER

PLAN	
DRAWN BY P.D.	
CHECKED BY EWS.	
CORRECT J.J.R.	

ISSUE	DATE
A	Feb. 5, 1929
B	Nov. 1, 1930
C	3-14-42

B-ADDITIONAL SPIKE HOLES
C-NOTES REVISED

H-10



NOTES:-

SPECIFICATIONS FOR STEEL TIE PLATES AS PER A.R.E.A. MANUAL.

OTHER ARRANGEMENT OF RIBS ON BOTTOM OF PLATE WILL BE ACCEPTED WHEN PRESENTED BY THE MANUFACTURER AND APPROVED BY THE CHIEF ENGINEER.

BOSTON & MAINE R.R.

STANDARD TIE PLATE

FOR 130 LB. R.E. RAIL

Approved

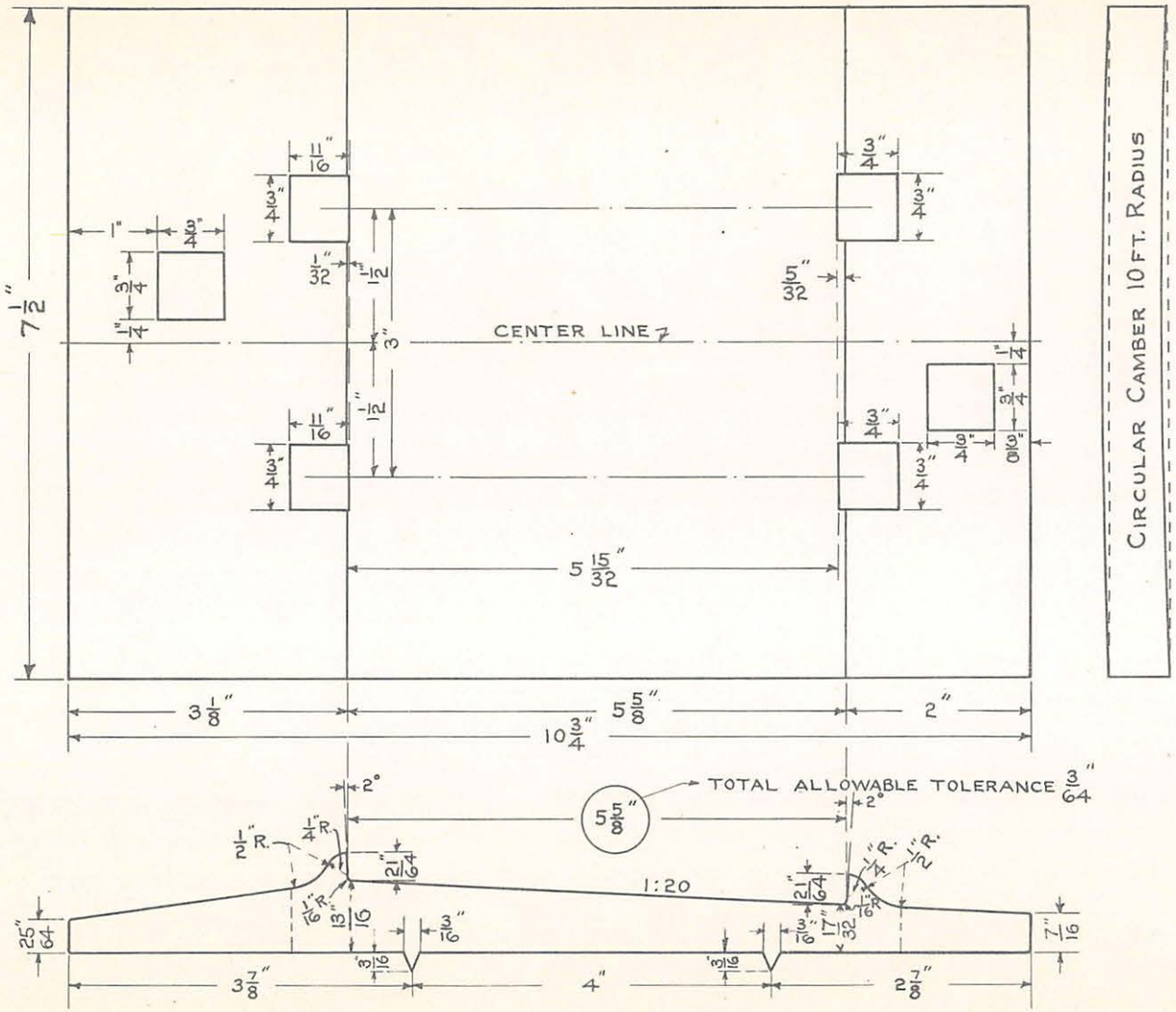
H F Fields
Engineer M. of W.

Chief Engineer

PLAN	
DRAWN BY P.L.D.	
CHECKED BY E.M.H.	
CORRECT J.J.R.	
ISSUE	DATE
A	5-22-29
B	11-1-30
C	2-2-33
D	3-14-42

B-ADDITIONAL SPIKE HOLES
C-$\frac{1}{16}$" INCREASE TO BASE THICKNESS
D-NOTES REVISED

H-11



NOTES:-
SPECIFICATIONS FOR STEEL TIE PLATES AS PER A.R.E.A. MANUAL.

OTHER ARRANGEMENT OF BOTTOM OF PLATE WILL BE ACCEPTED WHEN PRESENTED BY THE MANUFACTURER AND APPROVED BY THE CHIEF ENGINEER.

BOSTON AND MAINE R.R.
STANDARD
TIE PLATE
FOR 100 LB. N.H. RAIL

Approved

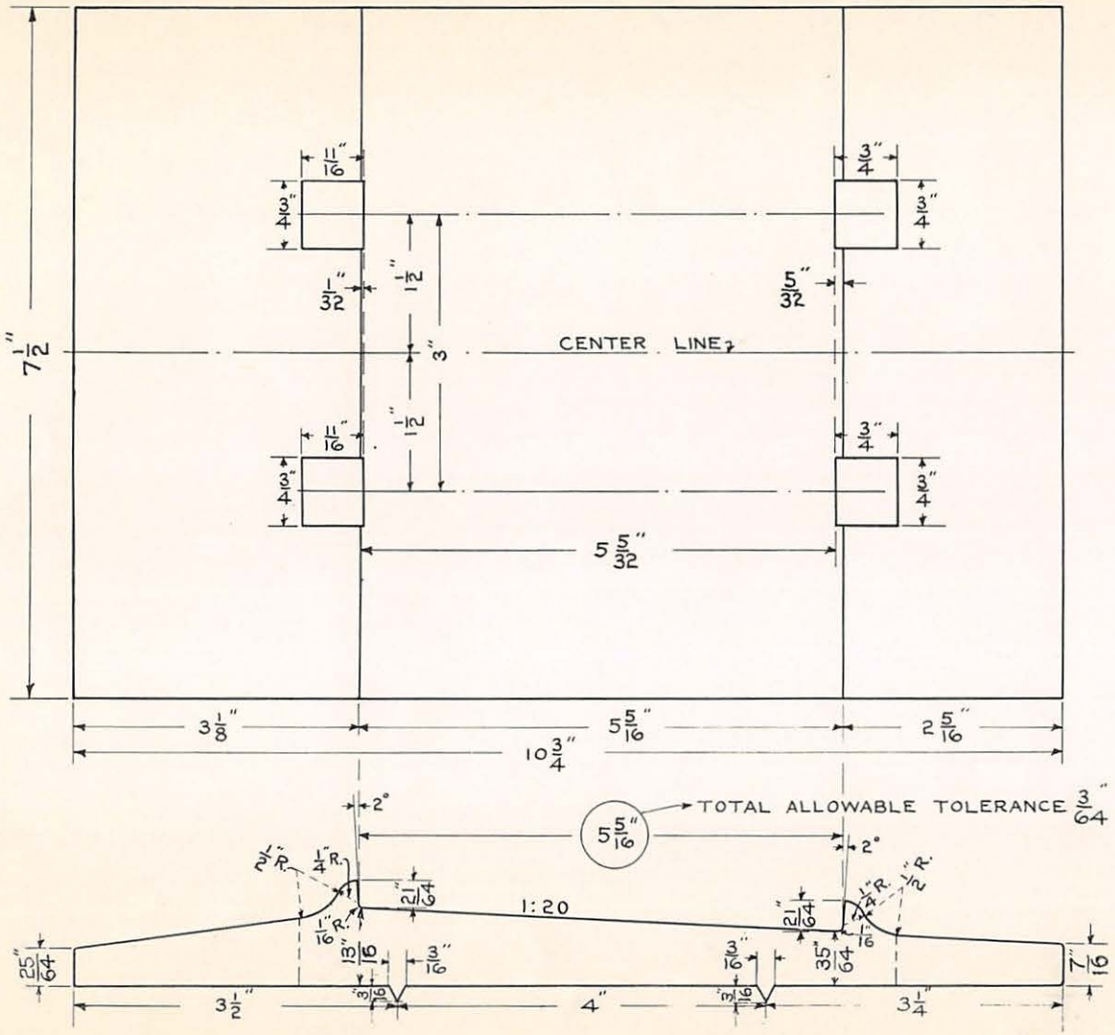
H. F. Fifield
Engineer M. of W.

Chief Engineer

PLAN	
DRAWN BY P.L.D.	
CHECKED BY	
CORRECT J.J.R.	
ISSUE	DATE
A	5-22-'29
B	2-2-'33
C	5-28-40

B - 1/16" INCREASE TO BASE THICKNESS
C - NOTES REVISED

H-12



CIRCULAR CAMBER 10 FT. RADIUS

NOTES:-
SPECIFICATIONS FOR STEEL TIE PLATES AS PER A.R.E.A. MANUAL.

OTHER ARRANGEMENT OF BOTTOM OF PLATE WILL BE ACCEPTED WHEN PRESENTED BY THE MANUFACTURER AND APPROVED BY THE CHIEF ENGINEER.

BOSTON AND MAINE R. R.
STANDARD
TIE PLATE
FOR 85 LB. A.S.C.E. RAIL

Approved

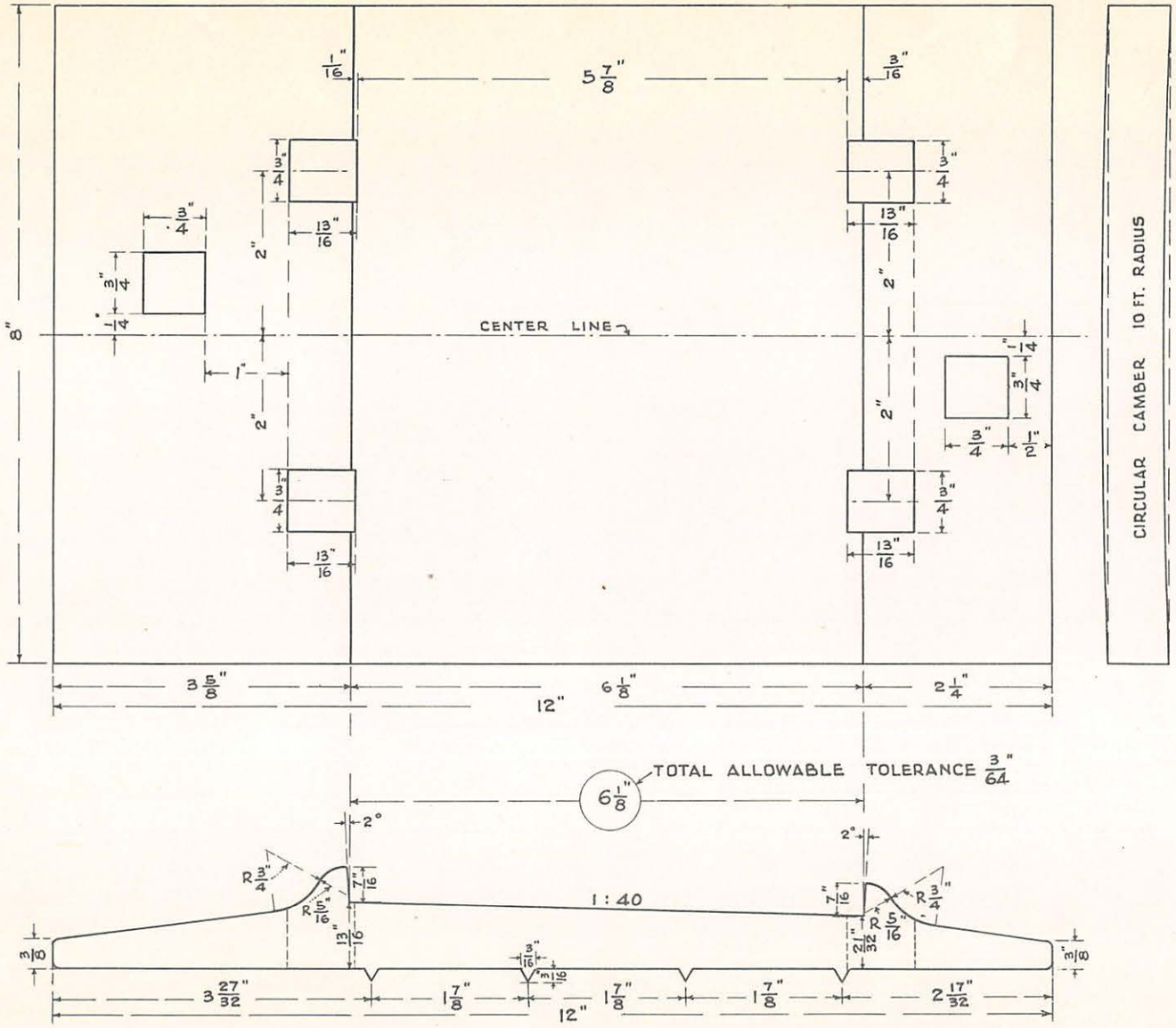
F. F. Fuller
Engineer M. of W.

W. T. Cunningp
Chief Engineer

PLAN	
DRAWN BY HAR.	
CHECKED BY J.P.C.	
CORRECT J.J.R.	
ISSUE	DATE
A	3-20-34
B	3-1-35
C	3-14-42

B 1/2" FIGURE AT LAG HOLE.
C - NOTES REVISED

H14



NOTES:

SPECIFICATIONS FOR STEEL TIE PLATES AS PER A.R.E.A. MANUAL.

OTHER ARRANGEMENT OF RIBS ON BOTTOM OF PLATE WILL BE ACCEPTED WHEN PRESENTED BY THE MANUFACTURER AND APPROVED BY THE CHIEF ENGINEER.

BOSTON AND MAINE R.R.

STANDARD TIE PLATE

FOR 131 LB. R.E. RAIL

APPROVED

F. F. Fyfield
ENGINEER M. OF W.

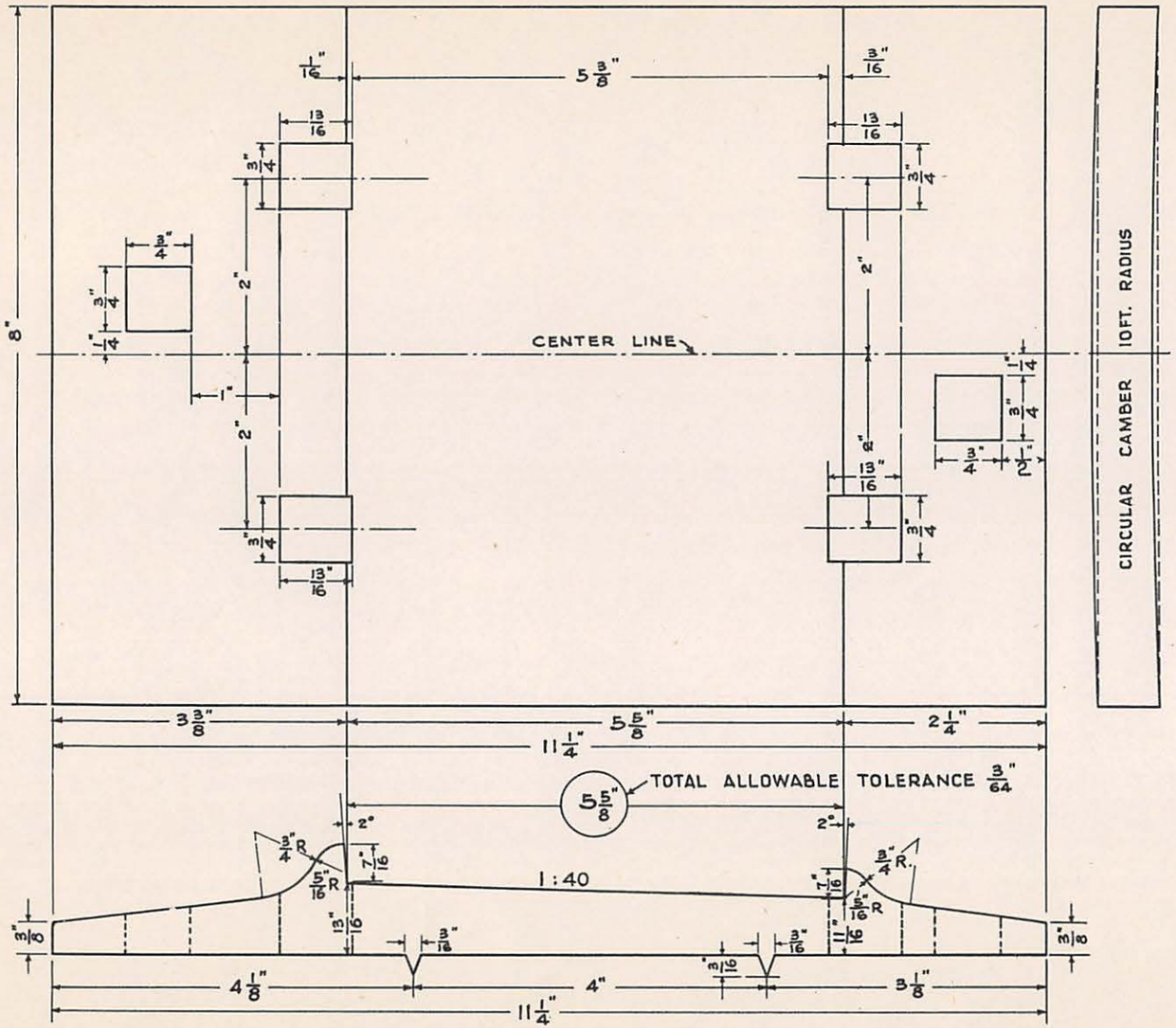
W. T. Cummings
CHIEF ENGINEER

PLAN
DRAWN BY HAR.
CHECKED BY J.P.C.
CORRECT J.J.R.

ISSUE	DATE
A	3-20-34
B	3-1-35
C	3-14-42
D	2-1-45

B - $\frac{1}{2}$" FIGURE AT LAG HOLE
C - NOTES REVISED
D - CANT 1 IN 40, ADDED.

H15



NOTES:

SPECIFICATIONS FOR STEEL TIE PLATES AS PER A.R.E.A. MANUAL.

OTHER ARRANGEMENT OF RIBS ON BOTTOM OF PLATE WILL BE ACCEPTED WHEN PRESENTED BY THE MANUFACTURER AND APPROVED BY THE CHIEF ENGINEER.

BOSTON AND MAINE R.R.
STANDARD
TIE PLATE
FOR 112 LB. R.E. RAIL
11 1/4" x 8"

APPROVED

H.F. Fifield
ENGINEER M. OF W.

CHIEF ENGINEER

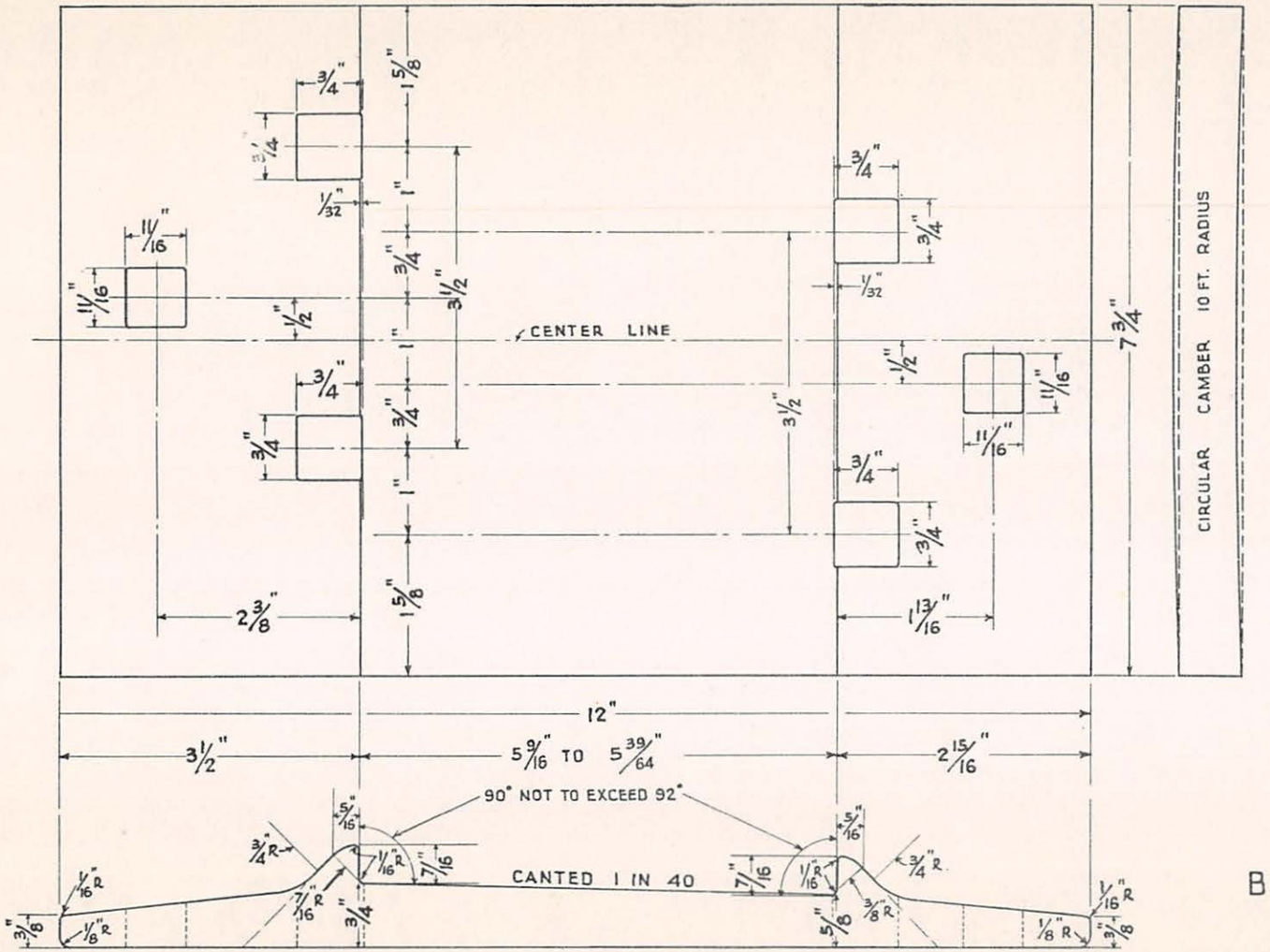
BOSTON AND MAINE RAILROAD

STANDARD PLANS

COMPILED IN OFFICE OF CHIEF ENGINEER
BOSTON, MASS.

PLAN	
DRAWN BY H.A.R.	
CHECKED F.W.H.	
CORRECT J.P.C.	
ISSUE	DATE
A	10-5-48

H16



NOTES:

SPECIFICATIONS FOR STEEL TIE PLATES AS PER A.R.E.A. MANUAL.

AN ARRANGEMENT OF RIBS ON BOTTOM OF PLATE WILL BE ACCEPTED WHEN PRESENTED BY THE MANUFACTURER AND APPROVED BY THE CHIEF ENGINEER.

BOSTON AND MAINE R.R.

STANDARD

TIE PLATE

FOR 115 L.B. R.E. RAIL

12" x 7 3/4"

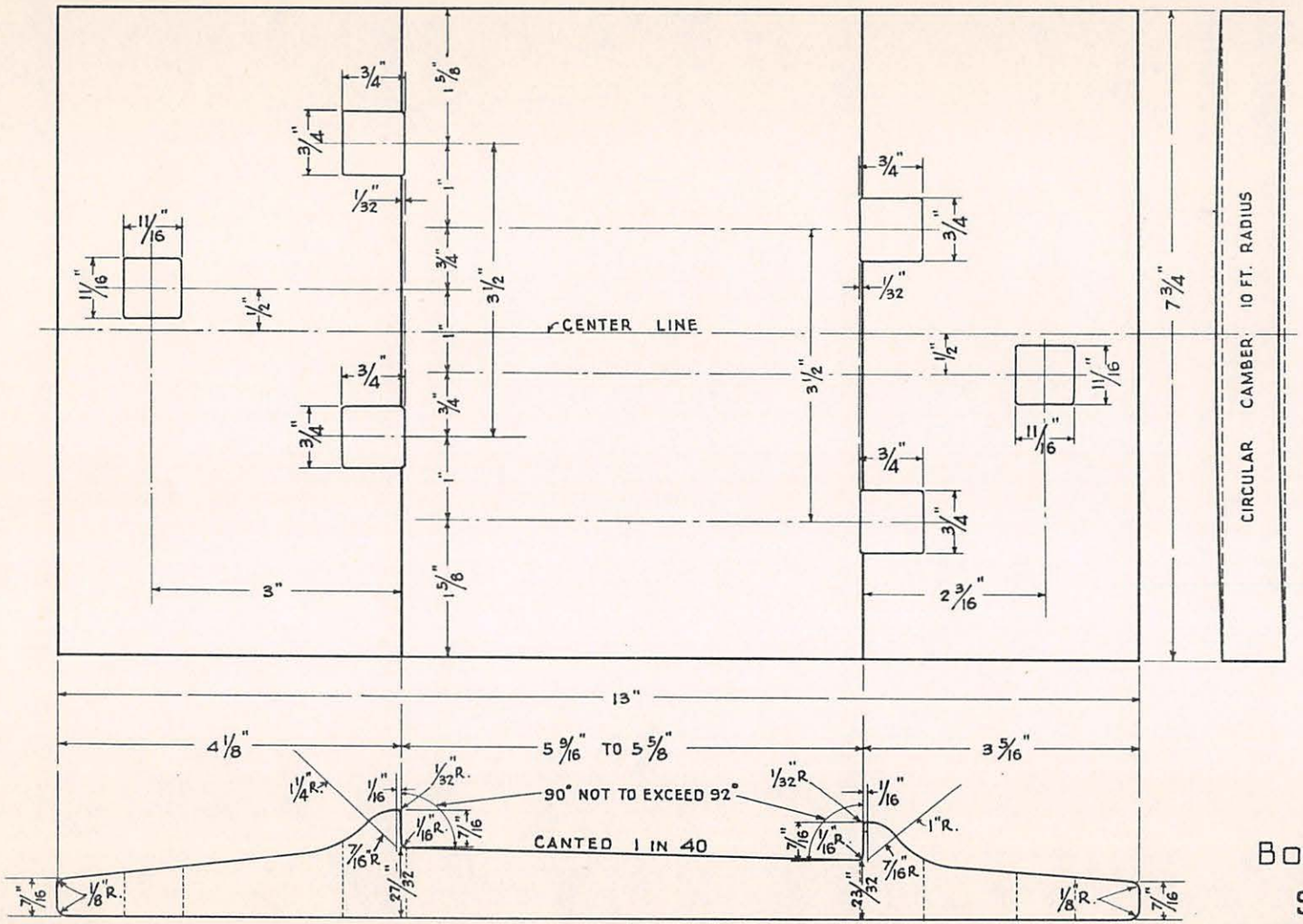
APPROVED:

H. F. Fifield
ENGINEER M. OF W.

CHIEF ENGINEER.

PLAN	
DRAWN BY — H.A.R.	
CHECKED F.W.H	
CORRECT J.P.C.	
ISSUE	DATE
A	10-5-48

H16
A



NOTES:

SPECIFICATIONS FOR STEEL TIE PLATES AS PER A.R.E.A. MANUAL.

AN ARRANGEMENT OF RIBS ON BOTTOM OF PLATE WILL BE ACCEPTED WHEN PRESENTED BY THE MANUFACTURER AND APPROVED BY THE CHIEF ENGINEER.

BOSTON AND MAINE R. R.

STANDARD

TIE PLATE

FOR 115 LB. R.E. RAIL

13"×7¾"

APPROVED:

H. J. Fifield
ENGINEER M. OF W.

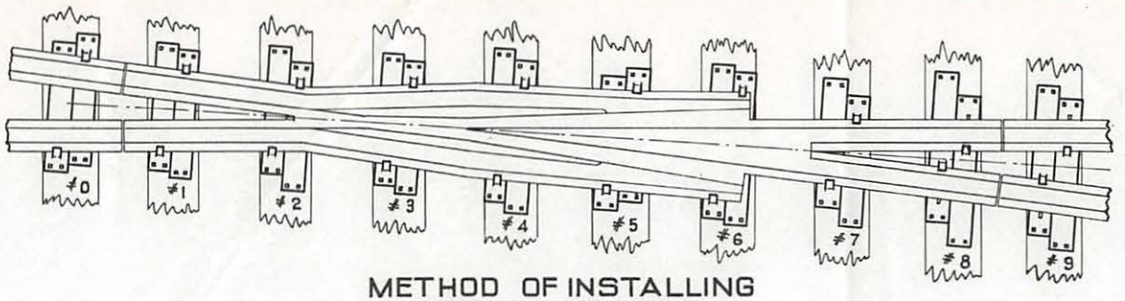
CHIEF ENGINEER.

PLAN	
DRAWN	K.A.R.
CHECKED	J.L.B.
CORRECT	J.J.R.

ISSUE	DATE
A	5-9-33
B	3-22-34
C	9-28-34
D	3-17-43
E	12-15-47
F	3-6-52

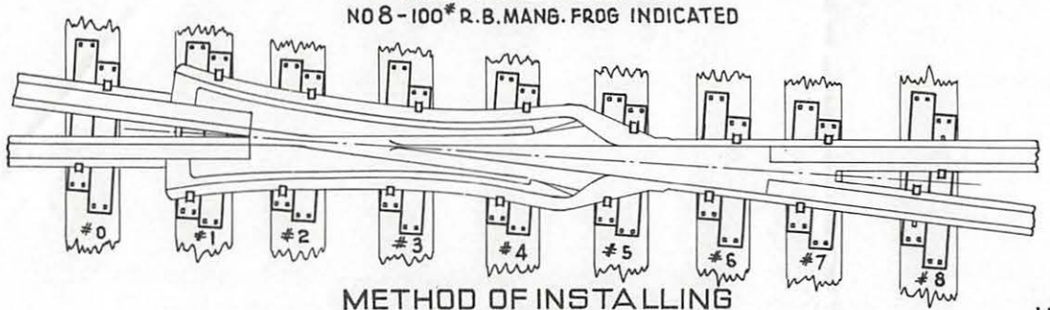
B THICKNESS OF PLATES
C-REVISED PLAN. 112# & 131# FROGS ADDED.
D- MAKE PLATES 1" THICK
E 115# ADDED
F "9-85"-100" ADDED

H17



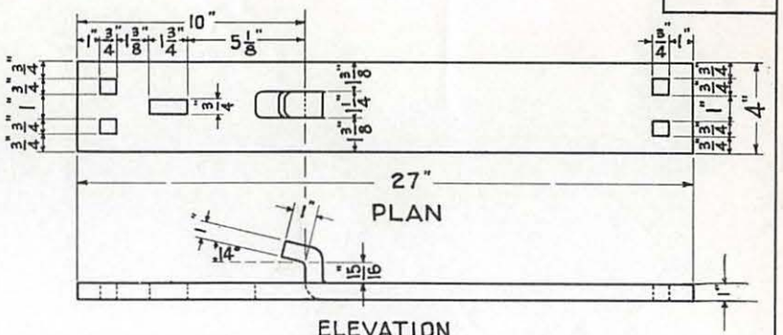
METHOD OF INSTALLING HOOK TIE PLATES

NO 8-100# R.B. MANG. FROG INDICATED



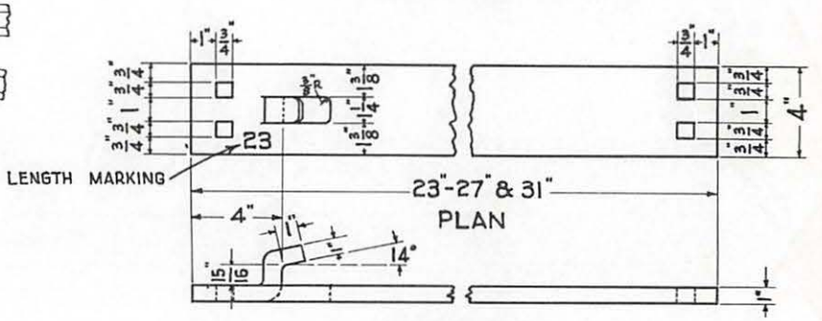
METHOD OF INSTALLING HOOK TIE PLATES

NO 8-100# SELF GUARDED SOLID MANG. STEEL FROG INDICATED



ELEVATION

REVERSED HOOK PLATE



ELEVATION

STANDARD HOOK PLATE

TABLE OF HOOK TIE PLATES WITH LENGTHS AND NUMBER PER FROG LOCATION ON TIES AS PER STANDARD PLANS.

RAIL BOUND MANGANESE STEEL FROGS

FROG NO.	WT. OF RAIL	FROG LENGTH	27"×4" REVERSED	NO. REQ'D	31"×4" STANDARD	NO. REQ'D	27"×4" STANDARD	NO. REQ'D	23"×4" STANDARD	NO. REQ'D	TOTAL PLATES	PLAN NO.
6	85-130	10'-0"	TIES #6-#7	4	TIE		TIES #0-#1-#3-#4	8	TIES #2-#5	4	16	
	TO 131	10'-8"	" 6-7	4			" 0-1-3-4	8	" 2-5	4	16	F6
7	85-130	12'-0"	" 8-9	4			" 0-1-4-5-6	10	" 2-3-7	6	20	F7
8	85-130	13'-0"	" 8-9	4			" 0-4-5-6	8	" 1-2-3-7	8	20	
	TO 131	14'-7½"	" 9-10	4	" 7	2	" 1-2-5-6	8	" 3-4-8	6	20	F8
10	85-130	16'-6"	" 10-11	4			" 0-1-4-5-6-7	12	2-3-6-9	8	24	
	TO 131	16'-3"	" 10-11-12	6			" 1-4-5-6-7	10	" 2-3-8-9	8	24	F9
12	85-130	18'-6"	" 11-12-13-14	8			" 0-1-4-5-6-7-8	14	" 2-3-9-10	8	30	
	TO 131	18'-8½"	" 11-12-13-14	8			" 0-4-5-6-7-8	12	" 1-2-3-9-10	10	30	F12
15	85-130	22'-6"	" 14-15-16	6			" 0-5-6-7-8-9-10	14	" 1-2-3-4 11-12-13	14	34	
	TO 131	23'-7"	" 14-15-16	6			" 0-5-6-7-8-9-10	14	" 1-2-3-4-11-12-13	14	34	F10
20	85-130	29'-0"	17-18-19-20-21-22	12	TIE #11	2	" 0-5-6-7-8-9-10-12	16	" 1-2-3-4-13-14-15-16	16	46	
	TO 131	30'-0½"	18-19-20-21-22	10	" #13	2	"0-1-2-6-7-8-9-10-11-12	20	"14-15-16-17-3-4-5	14	46	F11

SELF GUARDED SOLID MANGANESE STEEL FROGS

6	85	5'-5"	TIE #7	2	TIE #1-2-4	6	TIE #3	2	TIE #0-5-6	6	16	
	100	5'-8"	" 7	2	" 1-2-4	6	" 3	2	" 0-5-6	6	16	
	112-115 130-131	7'-4"	" 8	2	" 1-2-3-5	8	" 4	2	" 6-7	4	16	F14
7	85	6'-3"	" 7	2	" 1-2-4	6	" 0-3	4	" 5-6	4	16	
	100	6'-7"	" 7	2	" 1-2-4	6	" 0-3	4	" 5-6	4	16	
	112-115 130-131	8'-1½"	" 8	2	" 1-2-3-5	8	" 4	2	" 6-7	4	16	"
8	85	7'-3"	" 8	2	" 1	2	" 0-2-3-4	8	" 5-6-7	6	18	
	100	7'-7"	" 8	2	" 1	2	" 0 2-3-4	8	" 5-6-7	6	18	
	112-115 130-131	8'-11"	" 9	2	" 1-2-5	6	" 4	2	" 3-6-7-8	8	18	"
9	85	8'-2½"	" 9	2	" 1-2-5	6	" 4	2	" 0-3-6-7-8	10	20	"
	100	8'-7½"	" 9	2	" 1-2-5	6	" 4	2	" 0-3-6-7-8	10	20	"
	112-115 130-131	9'-9"	" 9	2	" 1-2-5	6	" 4	2	" 0-3-6-7-8	10	20	"
10	85	8'-11"	" 9	2	" 1	2	" 2-3-4-5	8	" 0-6-7-8	8	20	
	100	9'-4"	" 9	2	" 1	2	" 2-3-4-5	8	" 0-6-7-8	8	20	
	112-115 130-131	11'-4½"	" 10	2	" 1-2-5	6	" 3-4	4	" 0-6-7-8-9	10	22	"

WEIGHT OF PLATES, 1"			
STANDARD	23"	=	25.5 #
"	27"	=	29.9 #
"	31"	=	34.4 #
REVERSED	27"	=	29.6 #

NOTE

THE SIGNING OF THIS PLAN BY THE OFFICERS OF THE BOSTON AND MAINE RAILROAD DENOTES THAT THE APPLIANCE SHOWN HEREON, WHILE OF SATISFACTORY QUALITY, IS ACCEPTABLE FOR PURCHASE AND USE BY THE RAILROAD BUT NO OTHER RESPONSIBILITY IS IMPLIED OR ASSUMED.

SPECIFICATION

MATERIAL- FORGED STEEL SOFT GRADE-A.R.E.A. SPECIFICATIONS.

MARK PLATES WITH ¾" NUMBERS INDICATING THE LENGTH.

BOSTON AND MAINE R.R.

TWIN HOOK FROG PLATES

FOR USE WITH DIFFERENT NUMBERS AND KINDS OF FROGS

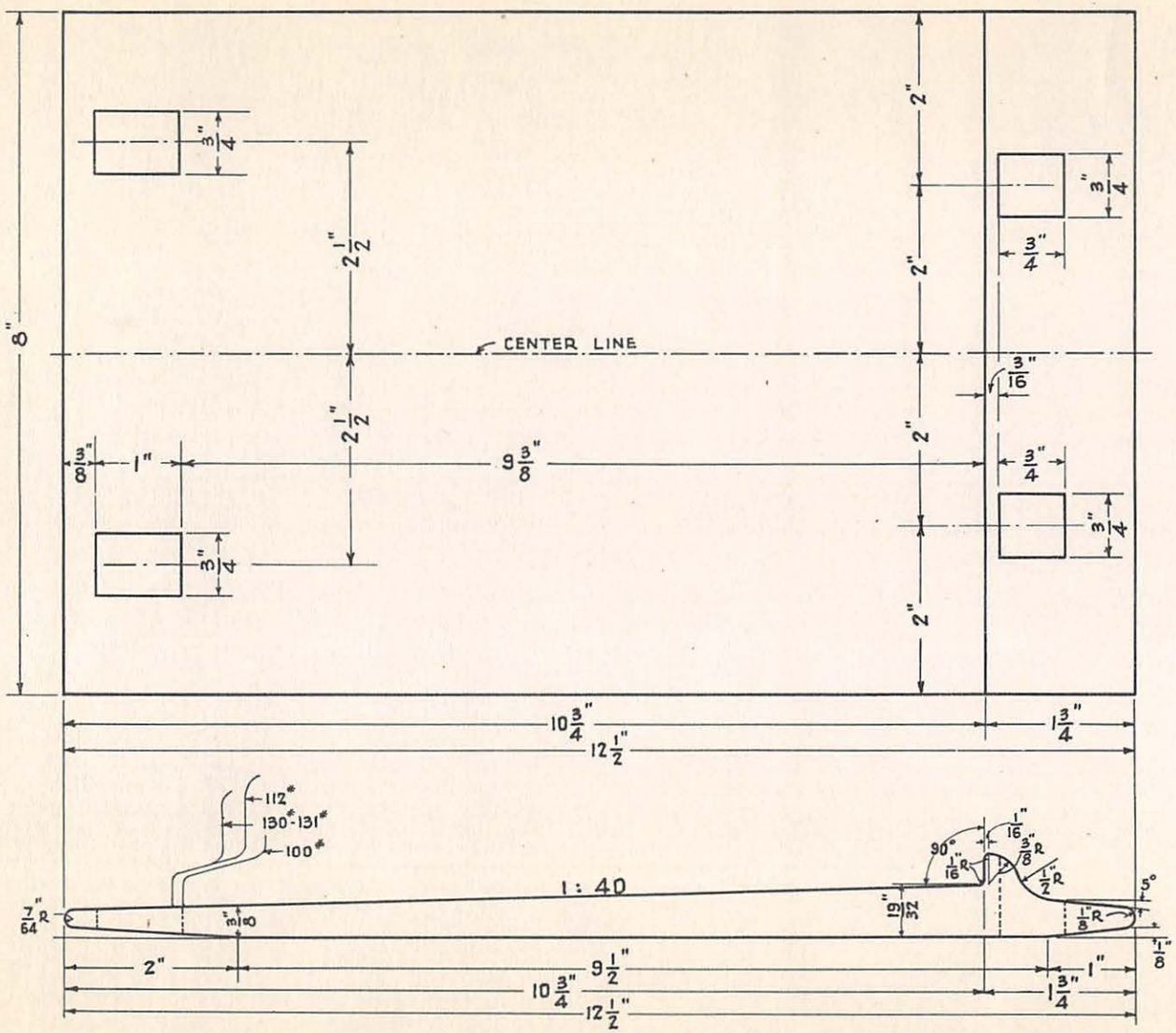
APPROVED

H.J. Fyfield
ENGINEER M. OF W.

S.P. Bancroft
CHIEF ENGINEER

PLAN	
DRAWN BY H.A.R.	
CHECKED BY E.M.H.	
CORRECT J.J.R.	
ISSUE	DATE
A	4-10-34

H18



BOSTON AND MAINE R.R.

STANDARD

ABRASION PLATE

FOR 131 LB. R.E. RAIL

CONTINUOUS INSULATED JOINTS

APPROVED

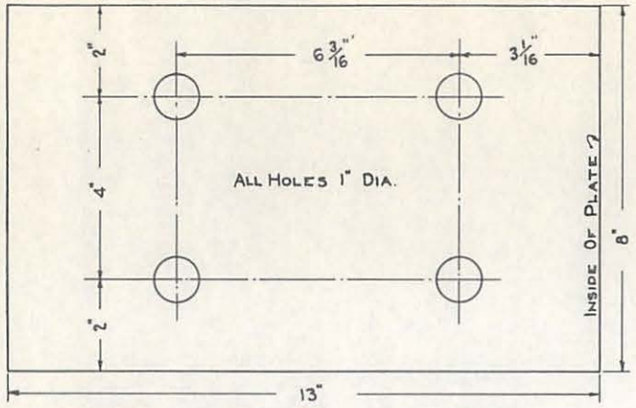
H.F. Fifield
ENGINEER M. OF W.

CHIEF ENGINEER

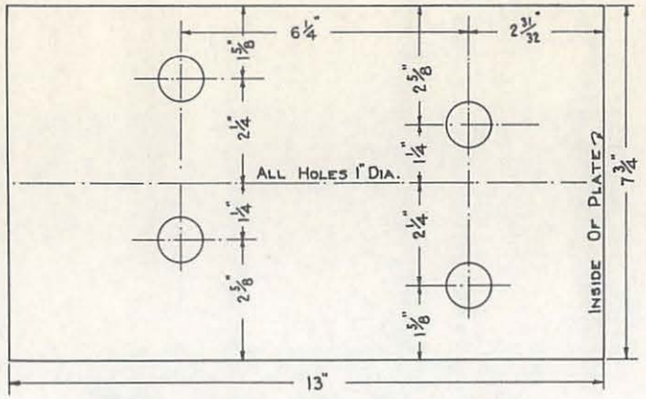
PLAN	
DRAWN:- F. B. W.	
CHECKED:- H. A. R.	
CORRECT:- F. W. H.	
ISSUE	DATE
D	5-11-48
E	5-2-53

D- REV. & REDRAWN.
E- ELIMINATED 12" BLOCK FOR 115 LB. RAIL

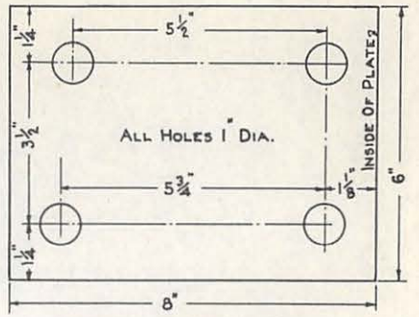
H-19



BORED BLOCK FOR 112 LB. RAIL



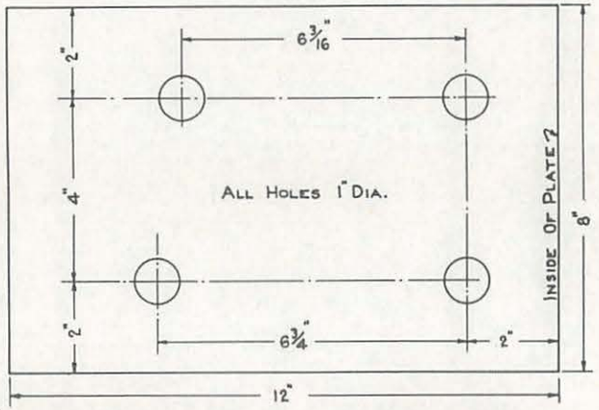
BORED BLOCK FOR 115 LB. RAIL



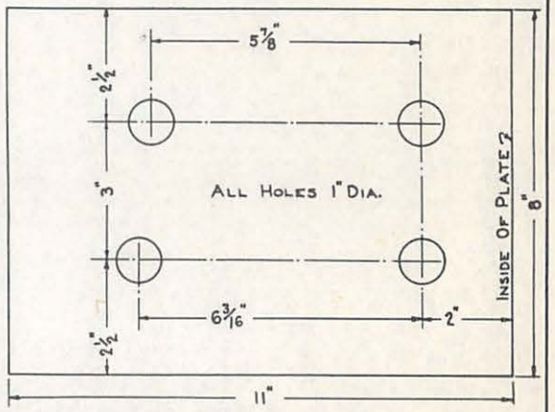
BORED BLOCK FOR
75, 76, 79 & 80 LB. RAIL

FROST BLOCKS

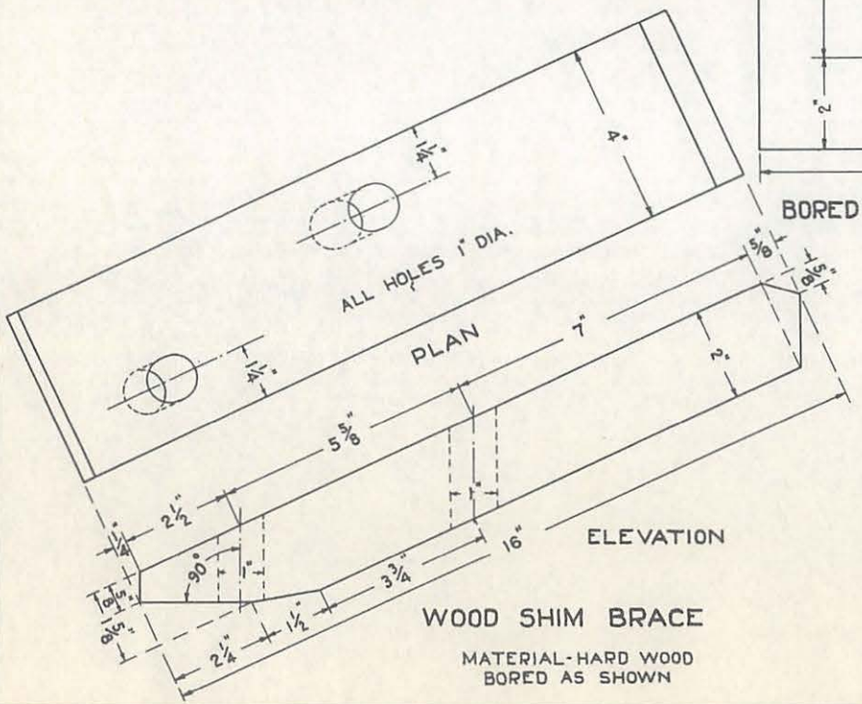
TO BE MADE OF BEECH, BIRCH, MAPLE OR OAK.
PLUG BLOCKS TO BE 6"x 8"- 1/8", 1/4" & 3/8" THICK.
BORED BLOCKS TO BE 1/2" TO 1 1/4" THICK VARYING BY 1/4 INCHES.
PLANK BLOCKS TO BE BORED IN FIELD.



BORED BLOCK FOR 112, 130 & 131 LB. RAIL



BORED BLOCK FOR 85 & 100 LB. RAIL



WOOD SHIM BRACE

MATERIAL- HARD WOOD
BORED AS SHOWN

USE OF SHIMS & BRACES

IN APPLYING BORED BLOCKS REMOVE THE TIE PLATES BEFORE FITTING BLOCKS.
PLANK SHIMS 2"x 8"x 26" TO BE SPIKED TO TIE.

BRACES

ON TANGENTS AND 1° CURVES USE AT LEAST 5 BRACES PER RAIL, EVENLY SPACED.
ON CURVES OVER 1° AND UP TO 3°, USE 6 BRACES PER RAIL.
ON CURVES OVER 3° AND UP TO 5°, USE 8 BRACES PER RAIL.
ON CURVES OVER 5°, BRACE EVERY OTHER TIE.

SPIKING

STANDARD SHIMMING SPIKES WILL BE FURNISHED ON REQUISITION. THEY MUST BE USED WITH SHIMS OF MORE THAN 3/4" THICKNESS.

BOSTON & MAINE R. R.

STANDARD FROST BLOCK AND SHIM BRACE

APPROVED

H. F. Fifield
ENGINEER M. OF W.

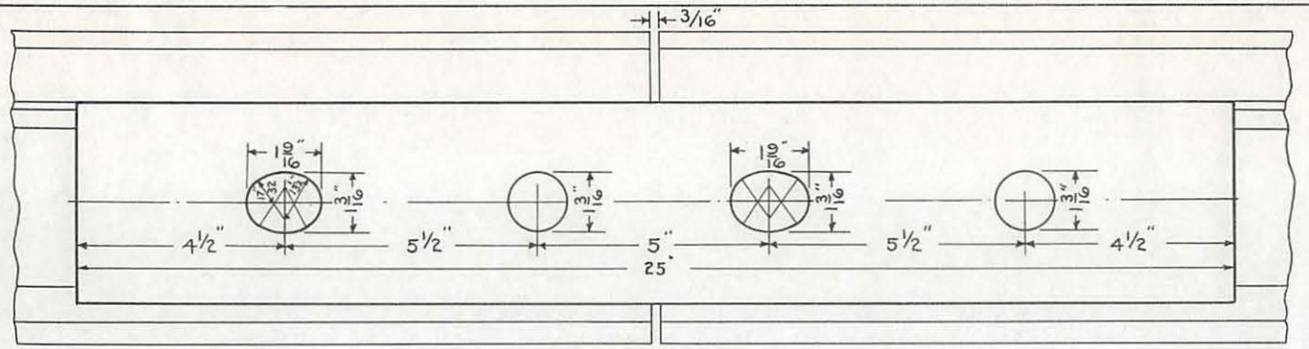
S. H. Hollis
CHIEF ENGINEER

PLAN	
DRAWN BY P.D.	
CHECKED BY E.M.H	
CORRECT. J.J.R.	
ISSUE	DATE
A	2-8-29
B	3-11-29
C	3-14-42
D	1-14-57

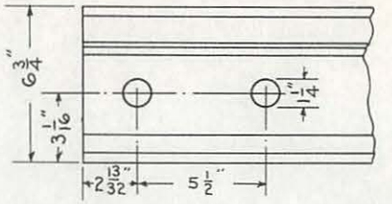
C REVISED BOLT AND NUT DIMENSIONS

D-ELIMINATED BOLT AND NUT DIMENSIONS

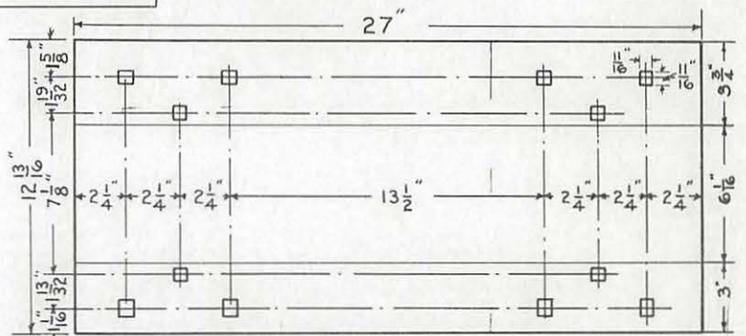
H-20



ELEVATION

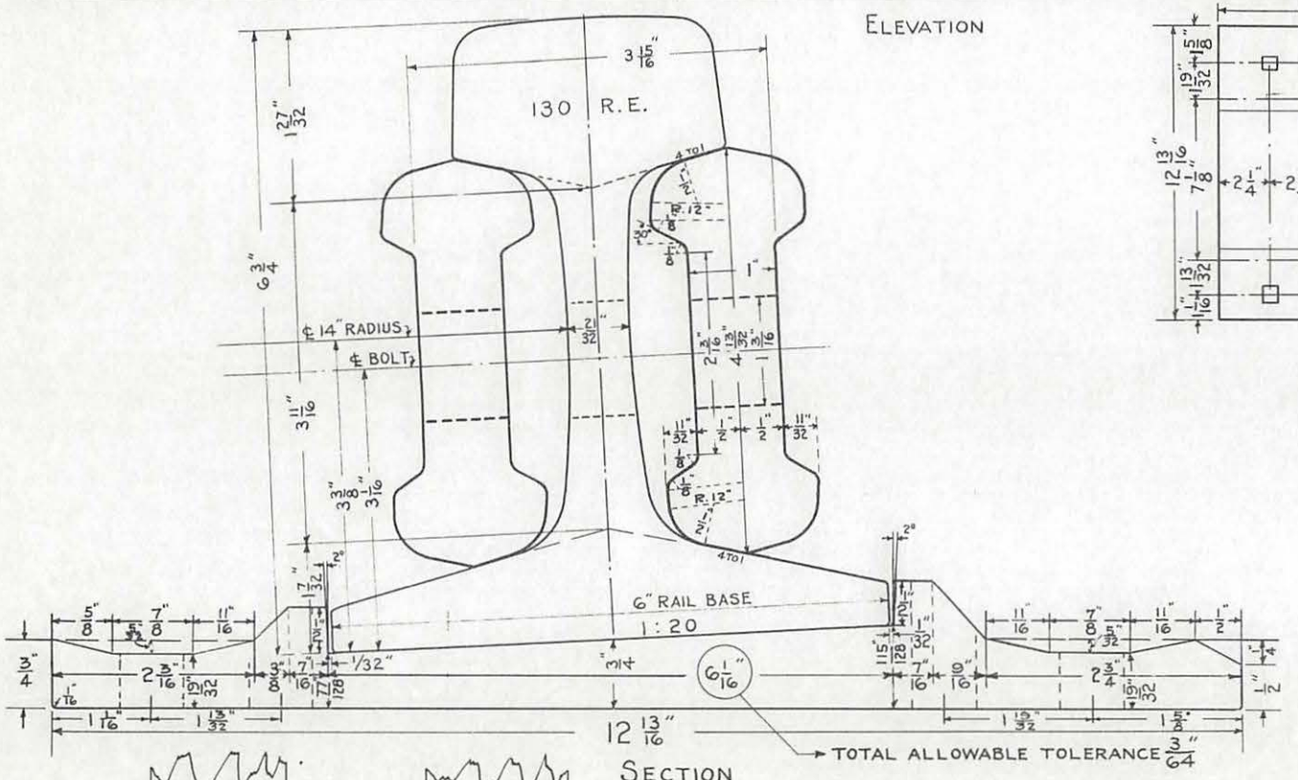


RAIL DRILLING

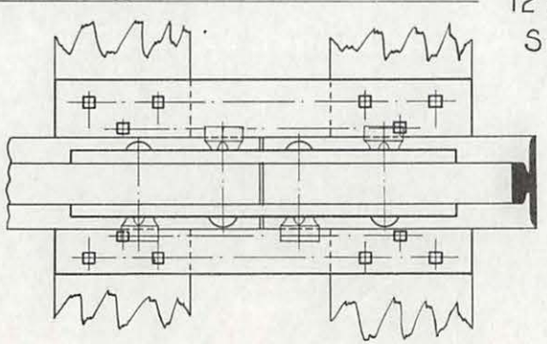


PLAN VIEW JOINT PLATE

FOR BOLT DIMENSIONS SEE STD. H-38



SECTION



PLAN OF JOINT

THE SIGNING OF THIS PLAN BY THE OFFICERS OF THE BOSTON AND MAINE RAILROAD DENOTES THAT THE APPLIANCE SHOWN HEREON, WHILE OF SATISFACTORY QUALITY, IS ACCEPTABLE FOR PURCHASE AND USE BY THE RAILROAD, BUT NO OTHER RESPONSIBILITY IS IMPLIED OR ASSUMED.

BOSTON & MAINE R.R.

NEAFIE RAIL JOINT

FOR 130 LB. R.E. RAIL

Approved

K.K. Dow
Engineer M. of W.

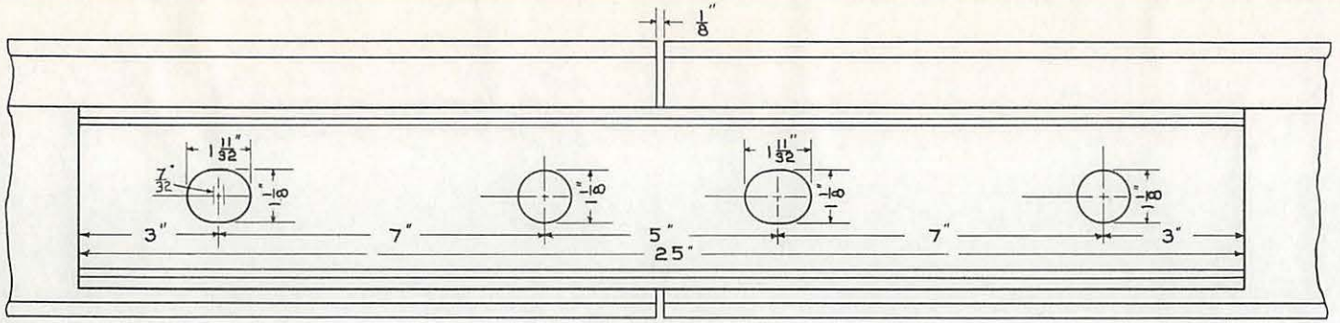
S.G. Phillips
Chief Engineer

PLAN	
DRAWN A.S.M.	
CHECKED F.A.T.	
CORRECT J.J.R.	
ISSUE	DATE
A	11-18-29
B	3-14-42
C	1-14-57

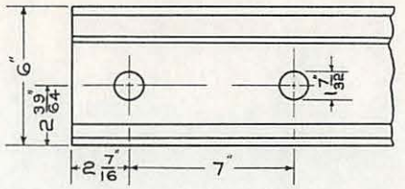
B- REVISED BOLT AND NUT DIMENSIONS.

C- ELIMINATED BOLT AND NUT DIMENSIONS

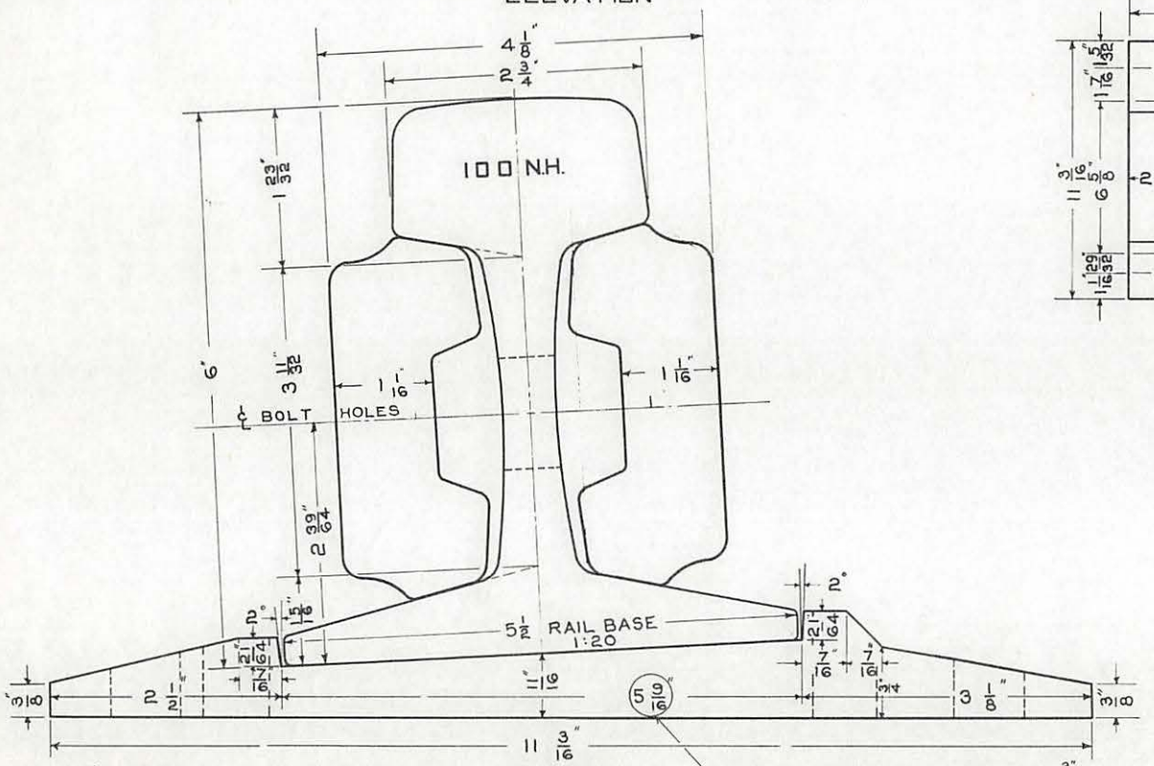
H21



ELEVATION

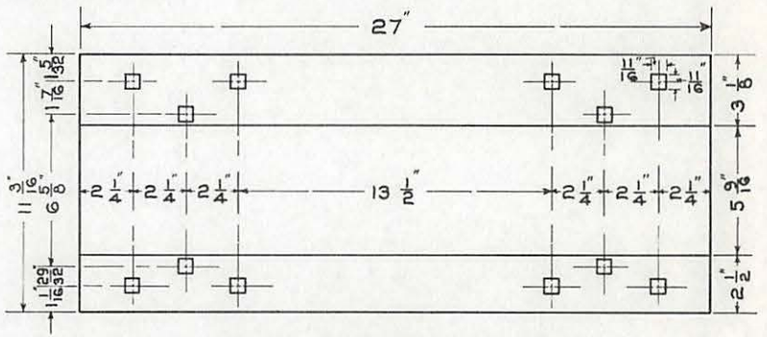


RAIL DRILLING



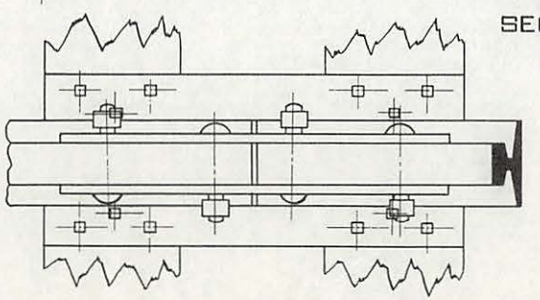
SECTION

TOTAL ALLOWABLE TOLERANCE 9/64"



PLAN VIEW JOINT PLATE

FOR BOLT DIMENSIONS SEE STD. H-38



PLAN OF JOINT

THE SIGNING OF THIS PLAN BY THE OFFICERS OF THE BOSTON AND MAINE RAILROAD DENOTES THAT THE APPLIANCE SHOWN HEREON, WHILE OF SATISFACTORY QUALITY, IS ACCEPTABLE FOR PURCHASE AND USE BY THE RAILROAD, BUT NO OTHER RESPONSIBILITY IS IMPLIED OR ASSUMED.

BOSTON & MAINE R.R.

NEAFIE RAIL JOINT

FOR 100 LB. N.H. RAIL

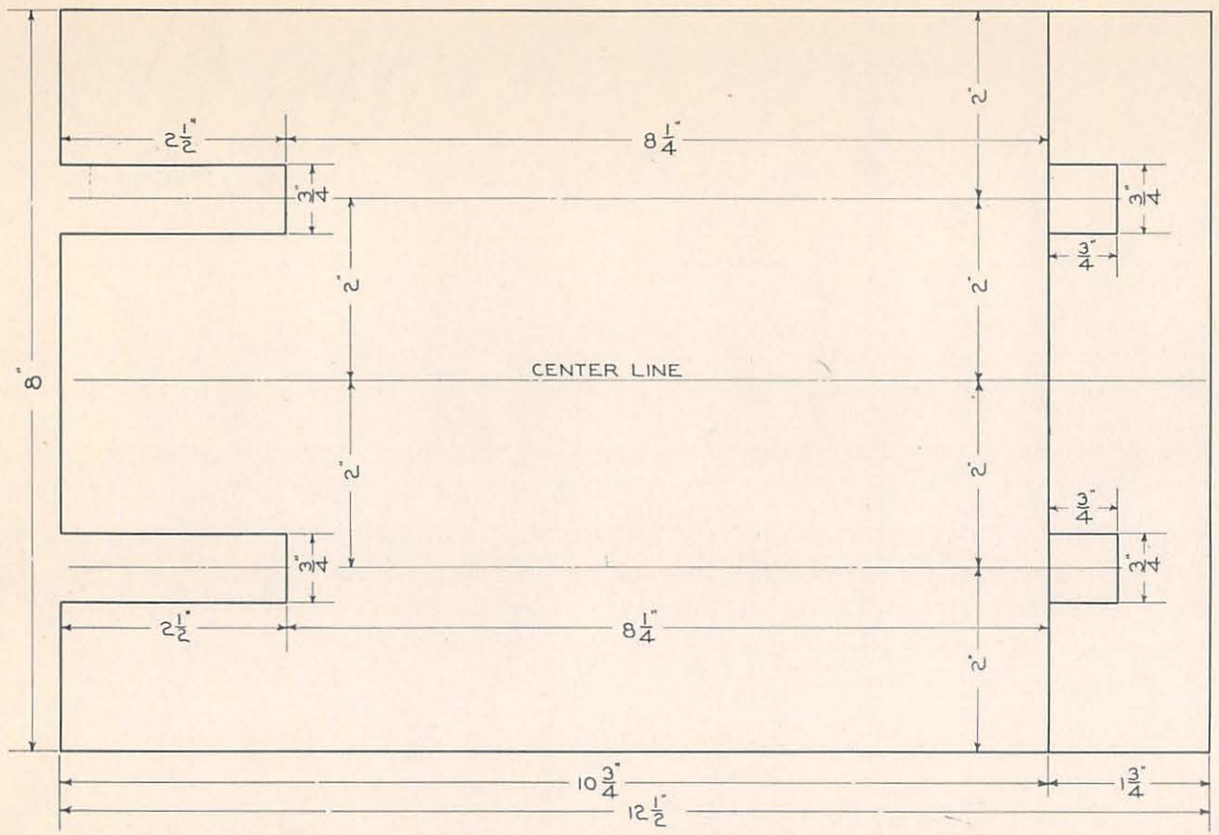
Approved

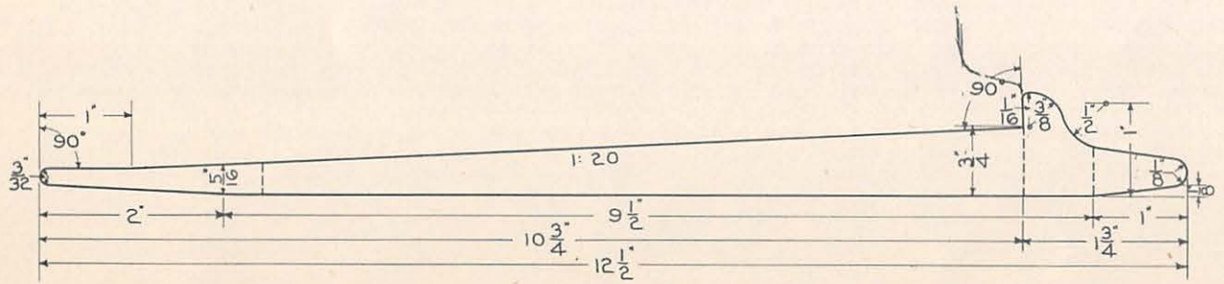
Engineer M. of W.

Chief Engineer

PLAN	
DRAWN BY: A.S.M.	
CHECKED: [illegible]	
CORRECT: J.J.R.	
ISSUE	DATE
A	1-24-30

H22





BOSTON & MAINE R. R.

STANDARD ABRASION PLATE

FOR 100 LB. N.H. & 130 LB. R.E. RAIL

CONTINUOUS INSULATED JOINTS

APPROVED

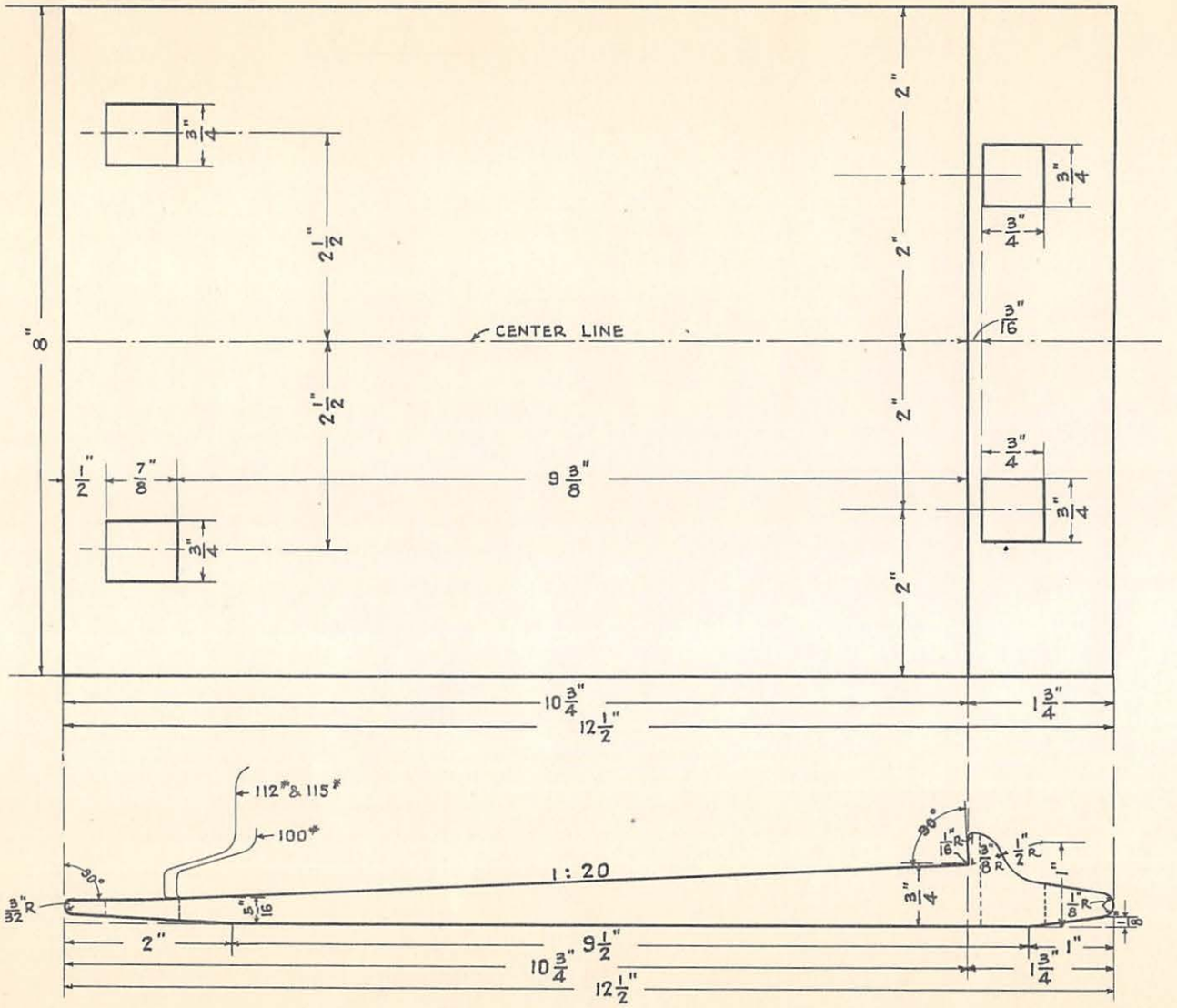
H. J. Fifield
ENGINEER M. OF W.

W. J. Bachler
CHIEF ENGINEER

PLAN	
DRAWN BY A.R.	
CHECKED BY E.M.H.	
CORRECT J.J.R.	
ISSUE	DATE
A	4-10-34
B	12-29-47

B = 115# RAIL ADDED.

H 22 A



BOSTON AND MAINE R.R.

STANDARD

ABRASION PLATE

100 LB. N.H.-112 & 115 LB. R.E. RAIL

CONTINUOUS INSULATED JOINTS

APPROVED

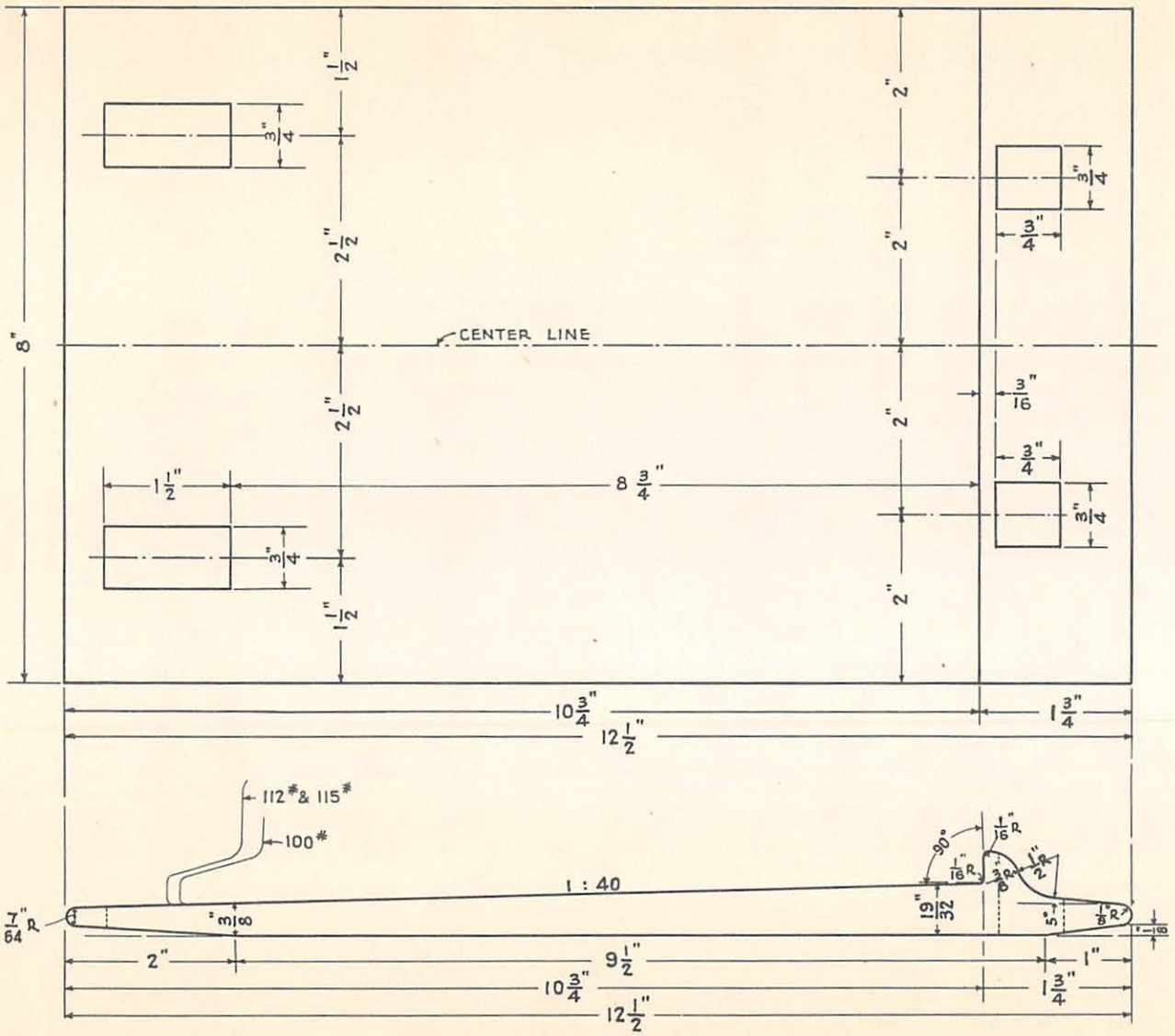
H. F. Fifield
ENGINEER M. OF W.

CHIEF ENGINEER

PLAN	
DRAWN BY H.A.P.	
CHECKED BY E.M.H.	
CORRECT FWH	
ISSUE	DATE
A	3-14-42
B	12-29-47

B = 115# RAIL ADDED.

H 22
B



THE SIGNING OF THIS PLAN BY THE OFFICERS OF THE BOSTON AND MAINE RAILROAD DENOTES THAT THE APPLIANCE SHOWN HEREON, WHILE OF SATISFACTORY QUALITY IS ACCEPTABLE FOR PURCHASE AND USE BY THE RAILROAD, BUT NO OTHER RESPONSIBILITY IS IMPLIED OR ASSUMED.

BOSTON AND MAINE R. R.

ABRASION PLATE

100 LB. N.H. - 112 & 115 LB. R.E. RAIL

CONTINUOUS INSULATED JOINTS

APPROVED

H. F. Fifield
ENGINEER M. OF W.

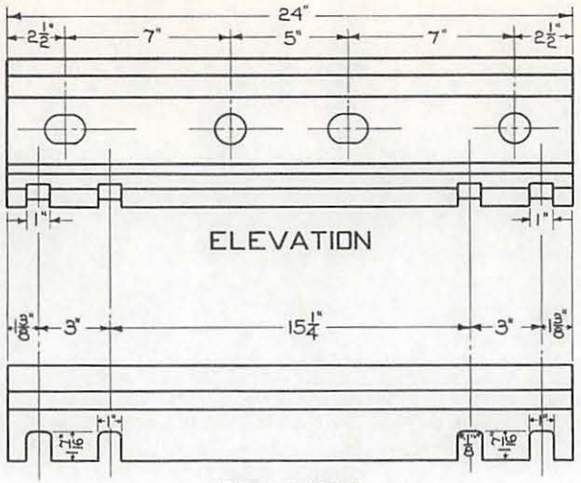
CHIEF ENGINEER

PLAN	
DRAWN: E.F.B.	
CHECKED: E.R.M.	
CORRECT: J.J.R.	
ISSUE	DATE
A	10-20-30
B	2-6-42
C	1-14-57

B- Revision of Bolt and Nut Dimensions

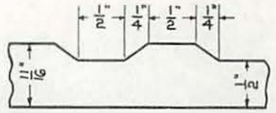
C- ELIMINATED BOLT AND NUT DIMENSIONS

H23

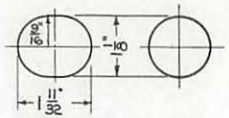


ELEVATION

TOP VIEW



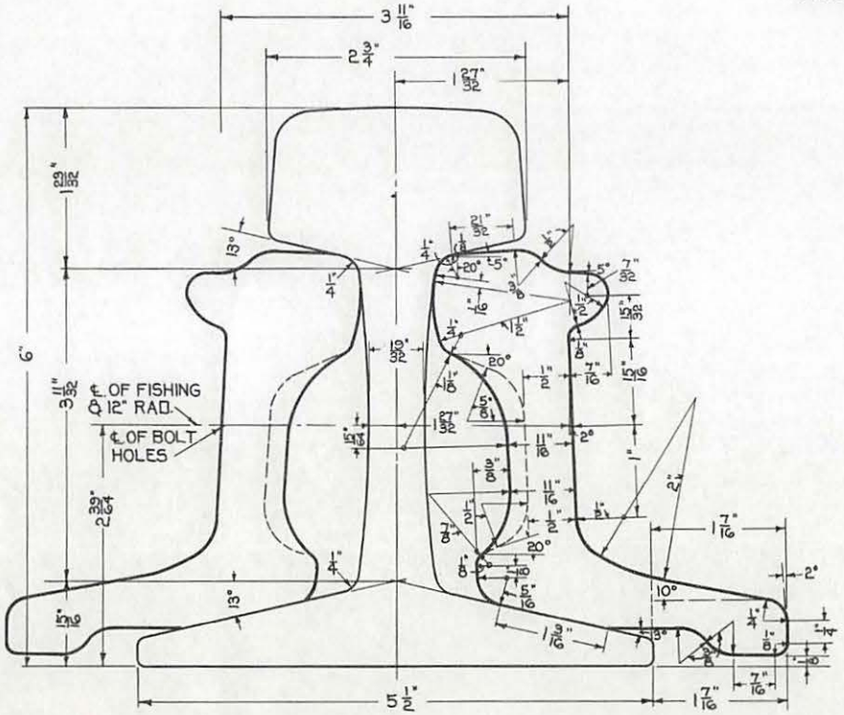
LONGITUDINAL SECTION OF WEB

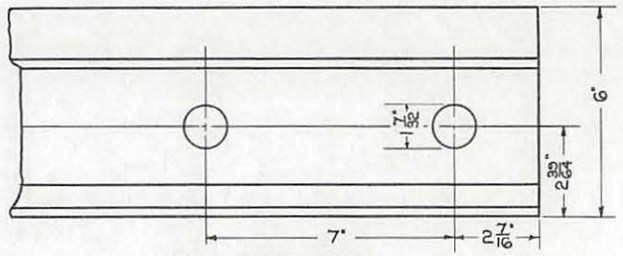


BOLT HOLES

(ALTERNATE OVAL AND ROUND)

FOR BOLT DIMENSIONS SEE STD. H-38





RAIL DRILLING

BOSTON AND MAINE R. R.

STANDARD

HEADFREE 100% JOINT

100 LB. RAIL

APPROVED

ENGINEER M. OF W.

CHIEF ENGINEER

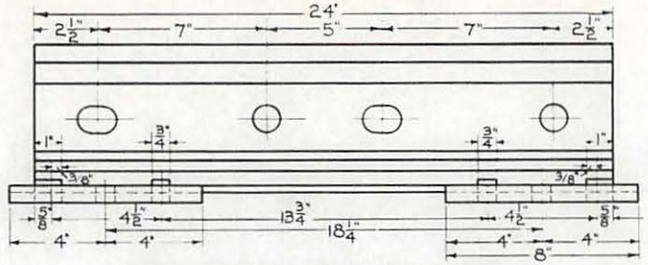
PLAN	
DRAWN: E.F.B.	
CHECKED: E.R.M.	
CORRECT: J.J.R.	
ISSUE	DATE
A	10-20-30
B	5-11-33
C	2-8-42
D	1-14-57

B-CH. IN CENT. BOLT MEAS WEIGHT ADDED

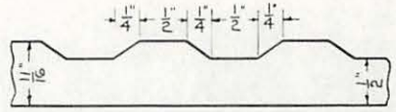
C-Revision of Bolt and Nut Dimensions

D-ELIMINATED BOLT AND NUT DIMENSIONS

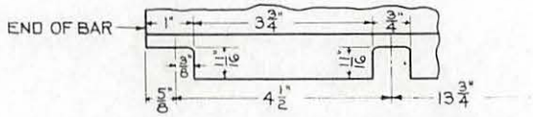
H24



SIDE ELEVATION OF JOINT

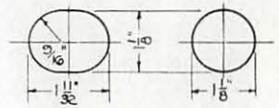


LONGITUDINAL SECTION OF WEB

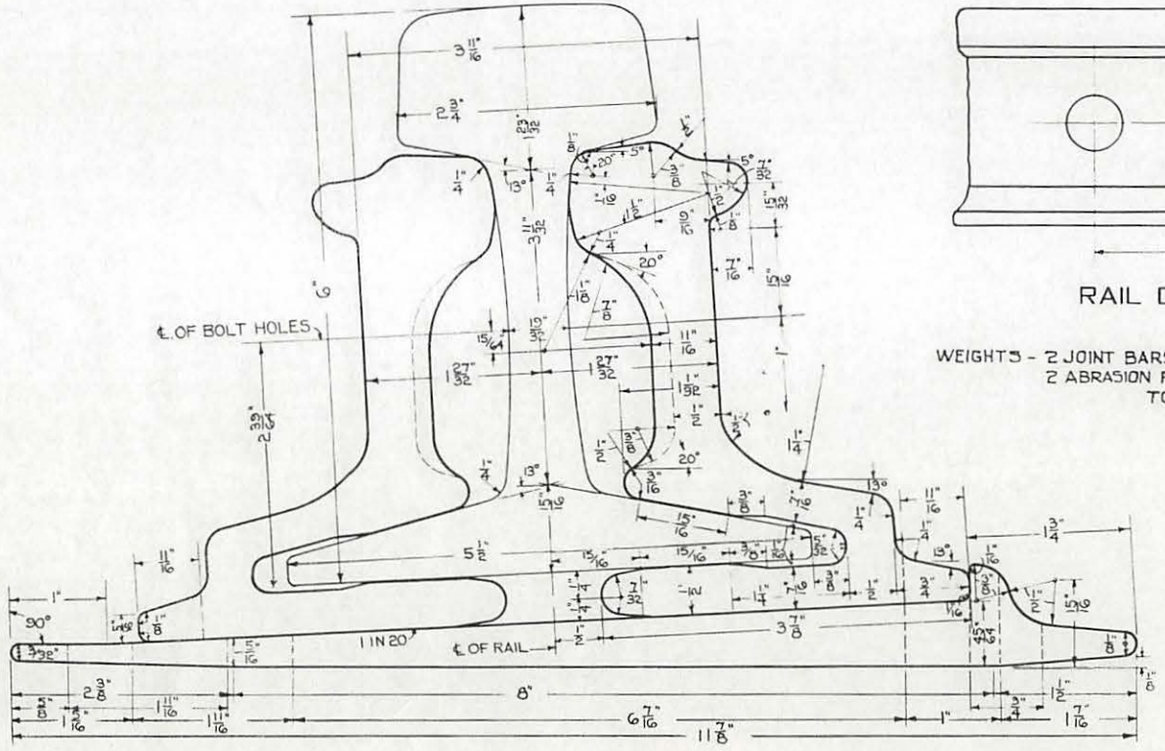


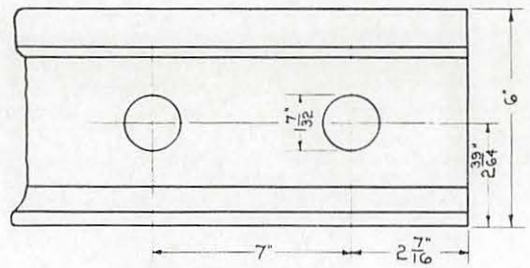
PLAN-SPIKE NOTCH AND SLOT

FOR BOLT DIMENSIONS SEE STD. H-38

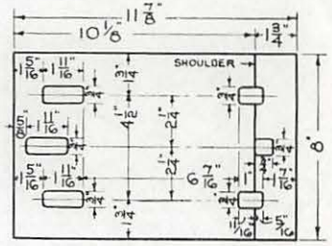


BOLT HOLES
(ALTERNATE OVAL AND ROUND)





RAIL DRILLING



PLAN OF ABRASION PLATE

WEIGHTS - 2 JOINT BARS 88#
2 ABRASION PLATES 24#
TOTAL 112#

BOSTON AND MAINE R. R.

STANDARD
HEAD FREE
CONTINUOUS JOINT
100 LB. RAIL

APPROVED

ENGINEER M. OF W.

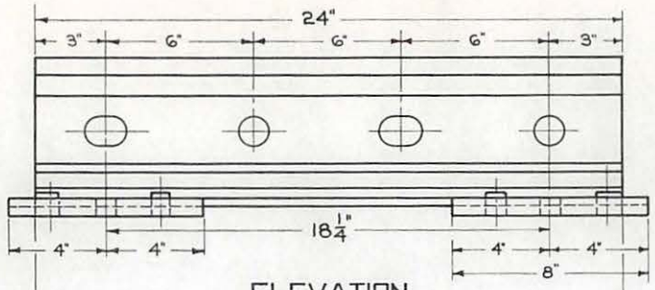
CHIEF ENGINEER

PLAN	
DRAWN E.F.B.	
CHECKED J.B.M.	
CORRECT J.J.R	
ISSUE	DATE
A	1-26-31
B	3-14-42
C	1-14-57

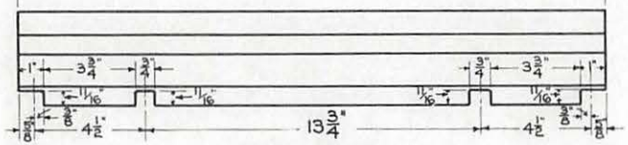
B - Revision of Bolt and Nut Dimensions

C - ELIMINATED BOLT AND NUT DIMENSIONS

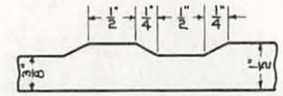
H25



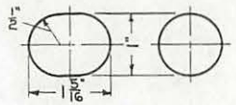
ELEVATION



TOP VIEW

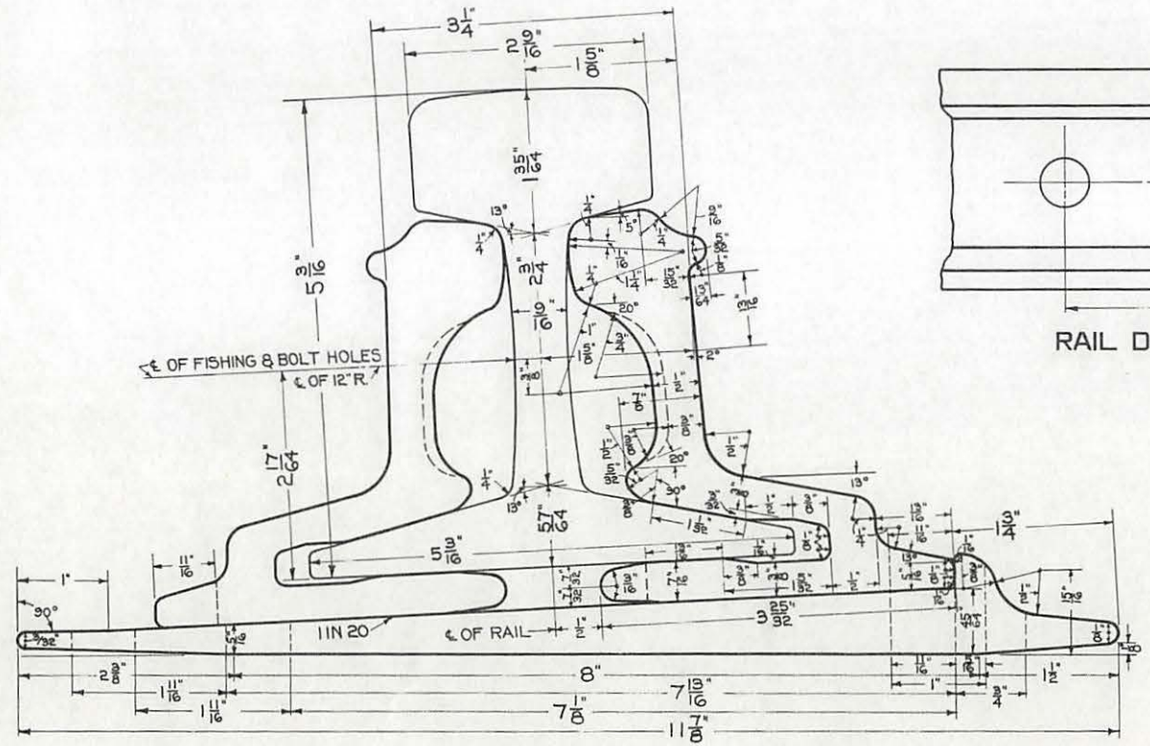


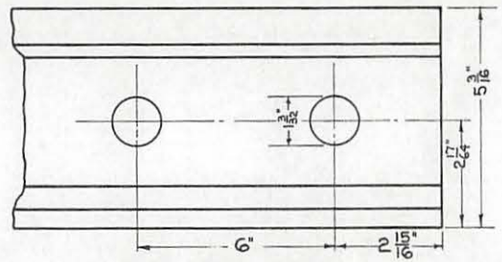
LONGITUDINAL SECTION OF WEB



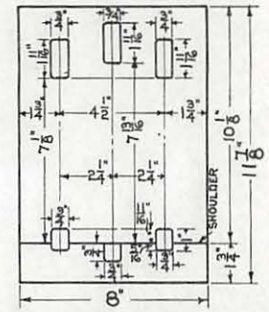
BOLT HOLES
(ALTERNATE OVAL AND ROUND)

FOR BOLT DIMENSIONS SEE STD. H-38





RAIL DRILLING



PLAN OF ABRASION PLATE

BOSTON AND MAINE R. R.

STANDARD
HEAD FREE
CONTINUOUS JOINT
85 LB. RAIL

APPROVED

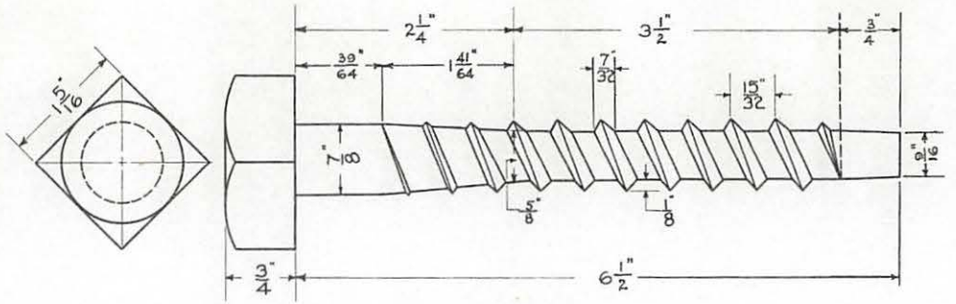
ENGINEER M. OF W.

CHIEF ENGINEER

PLAN	
DRAWN BY: A.S.M.	
CHECKED: E.R.M.	
CORRECT: J.J.R.	
ISSUE	DATE
A	6-10-30
B	7-23-52

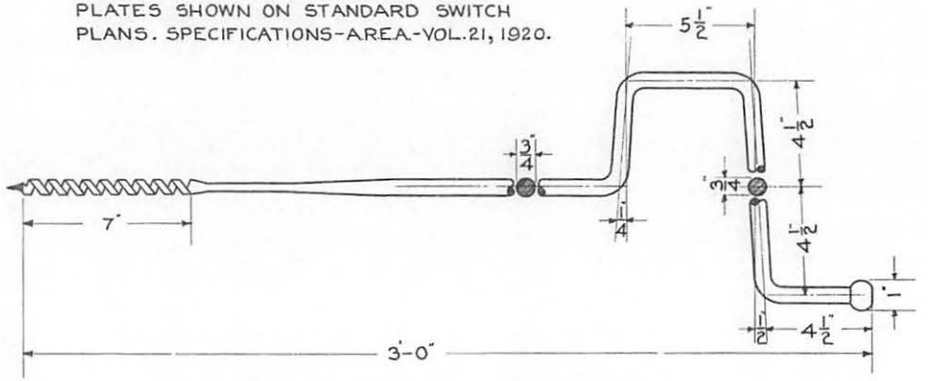
B- REVISION OF LAG SCREW

H 26



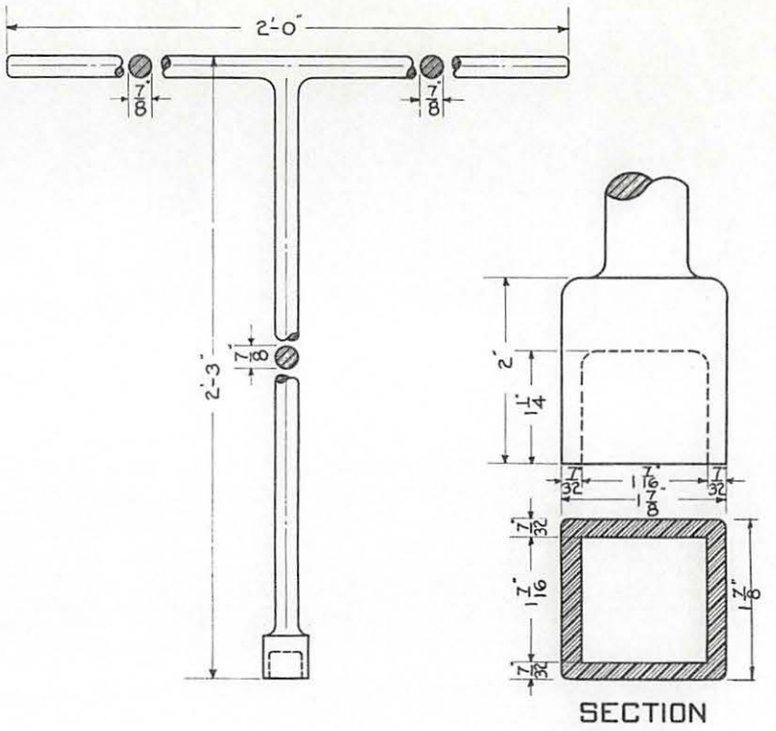
LAG SCREW

NOTE:-
LAG SCREW FOR USE WITH TIE PLATES 1B, 1A, NO.1 AND GAGE PLATE ON INTERLOCKING SWITCHES. LOCATION OF PLATES SHOWN ON STANDARD SWITCH PLANS. SPECIFICATIONS-AREA.-VOL.21, 1920.



SHIP AUGER AND BIT

NOTE:-
THE BIT SHALL BE 9/16" DIAMETER, WITH A 7" TWIST. SINGLE SCREW, ROUND SHANK. FOR USE WITH STANDARD SWITCH PLATE LAG SCREW.



SECTION

LAG SCREW WRENCH

NOTE:-
WRENCH FOR USE WITH 7/8" x 6 1/2" LAG SCREWS AS APPLIED TO SWITCH PLATES 1B, 1A, NO.1 AND GAGE PLATE, SHOWN ON STANDARD SWITCH PLANS. MATERIAL- OPEN-HEARTH STEEL.

BOSTON & MAINE R. R.

STANDARD
LAG SCREW
WITH AUGER BIT AND WRENCH FOR SWITCH PLATES

E. N. Fox
ENGINEER OF SIGNALS & TELEGRAPH

ENGINEER M. OF W.

CHIEF ENGINEER

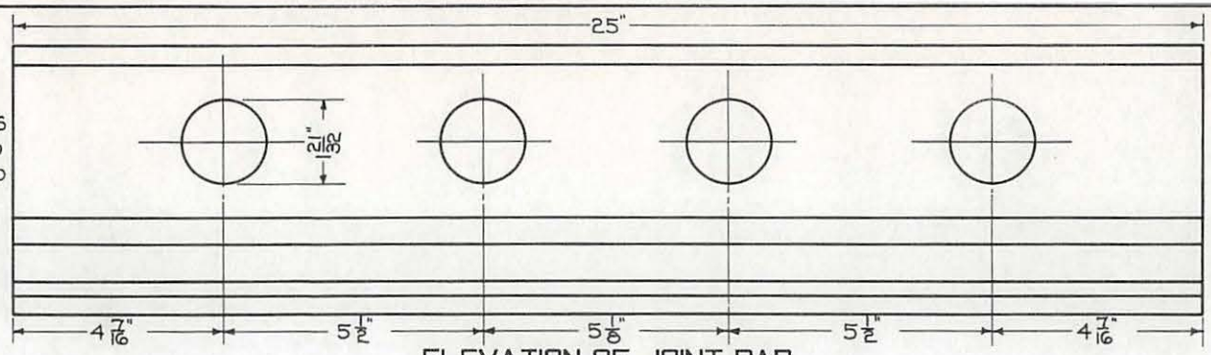
PLAN	
DRAWN E.F.B.	
CHECKED A.S.M.	
CORRECT J.J.R.	
ISSUE	DATE
A	1-26-31
B	12-16-31
C	1-14-57

B-CHANGE IN S.W.PL. PUNCHING

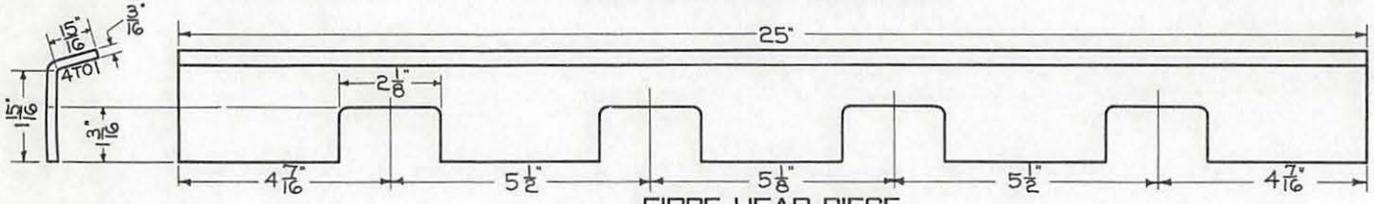
C- ELIMINATED BOLT AND NUT DIMENSIONS

H28

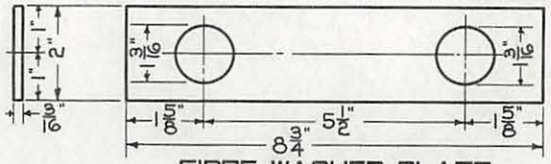
ASSEMBLE JOINTS WITH NUTS AND HEADS ALTERNATED



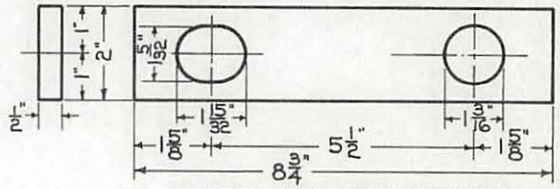
ELEVATION OF JOINT BAR



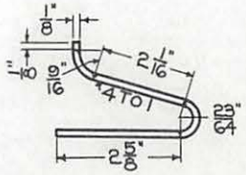
FIBRE HEAD PIECE

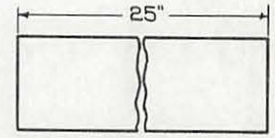


FIBRE WASHER PLATE



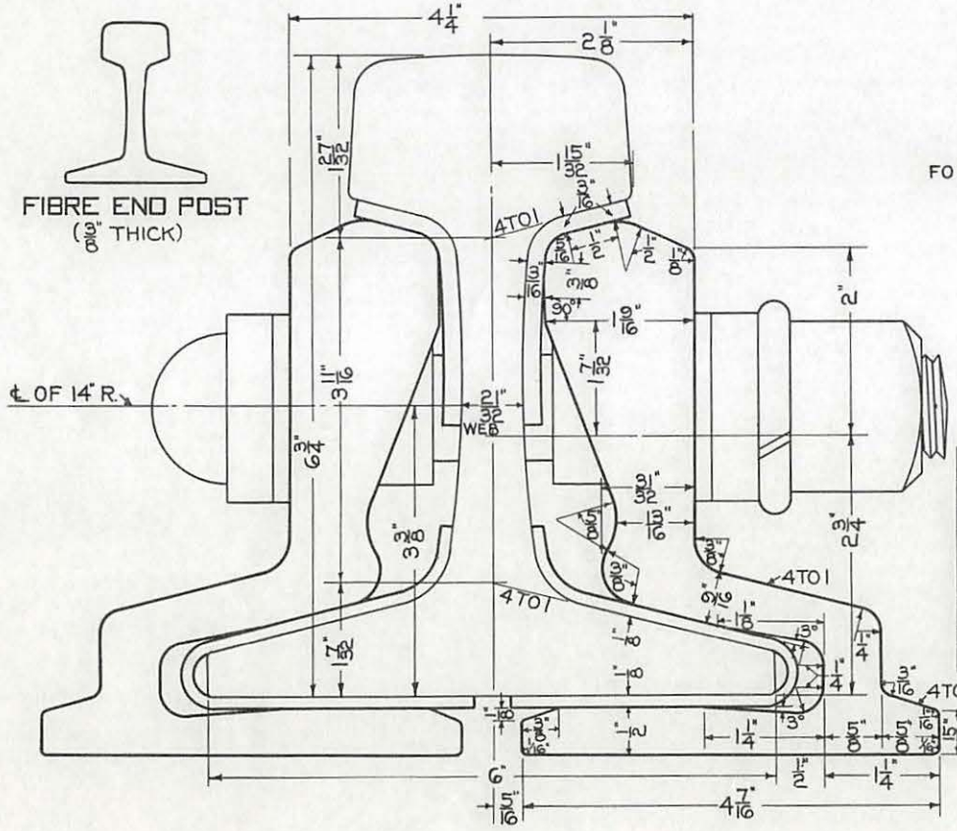
STEEL WASHER PLATE



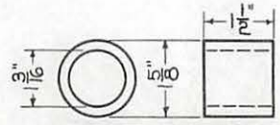


FIBRE BASE PIECE

FIBRE END POST (1/16" THICK)

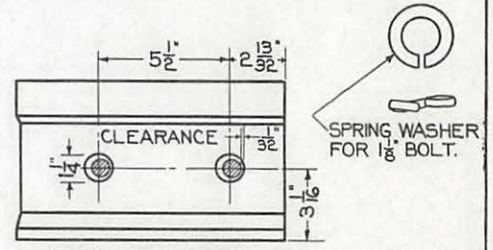


FOR BOLT DIMENSIONS SEE STD. H-38



FIBRE BUSHING

INSULATED PARTS	
NAME	NO.
FIBRE HEAD PIECE	9321
FIBRE BASE PIECE	71483-P
FIBRE END POST	9423
FIBRE BUSHING	7632-F
FIBRE WASHER PLATE	78761-B
STEEL WASHER PLATE	78381-A
CUT THREAD BOLT	76421



RAIL DRILLING

BOSTON AND MAINE R. R.

STANDARD CONTINUOUS INSULATED JOINT

130 LB R.E. RAIL

APPROVED

E. N. Fox

ENGINEER OF SIGNALS & COMMUNICATIONS

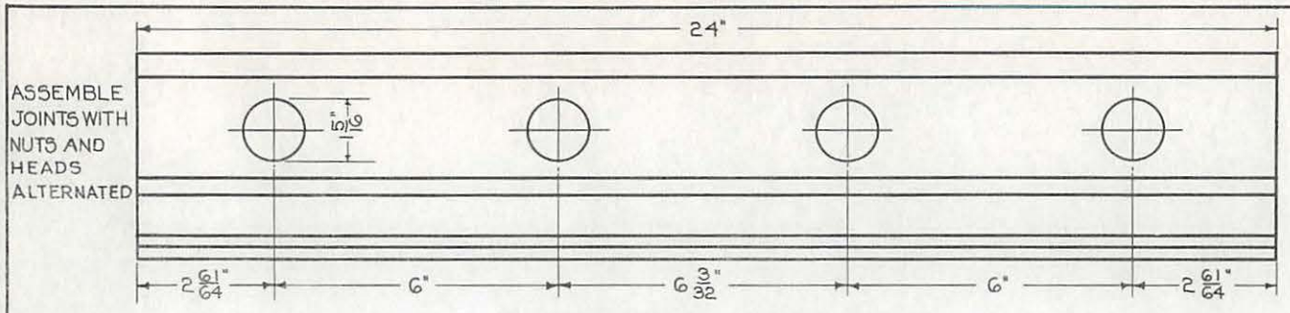
ENGINEER M. OF W.

CHIEF ENGINEER

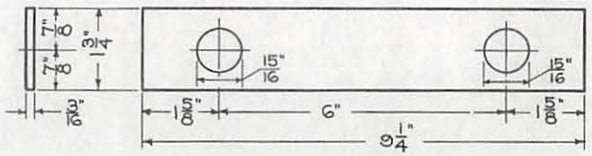
PLAN	
DRAWN E.F.B.	
CHECKED J.B.M.	
CORRECT J.J.R.	
ISSUE	DATE
A	12-16-31
B	1-14-57

B-ELIMINATED BOLT AND NUT DIMENSIONS

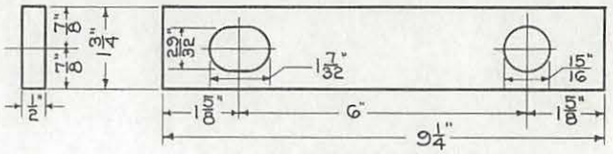
H29



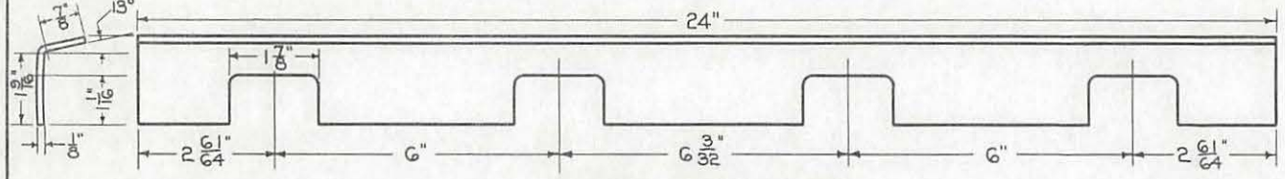
ELEVATION OF JOINT BAR



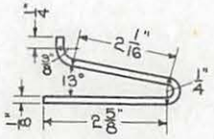
FIBRE WASHER PLATE

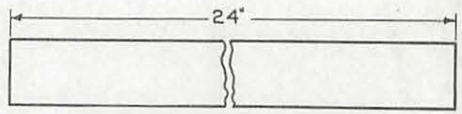


STEEL WASHER PLATE

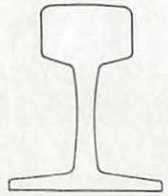


FIBRE HEAD PIECE

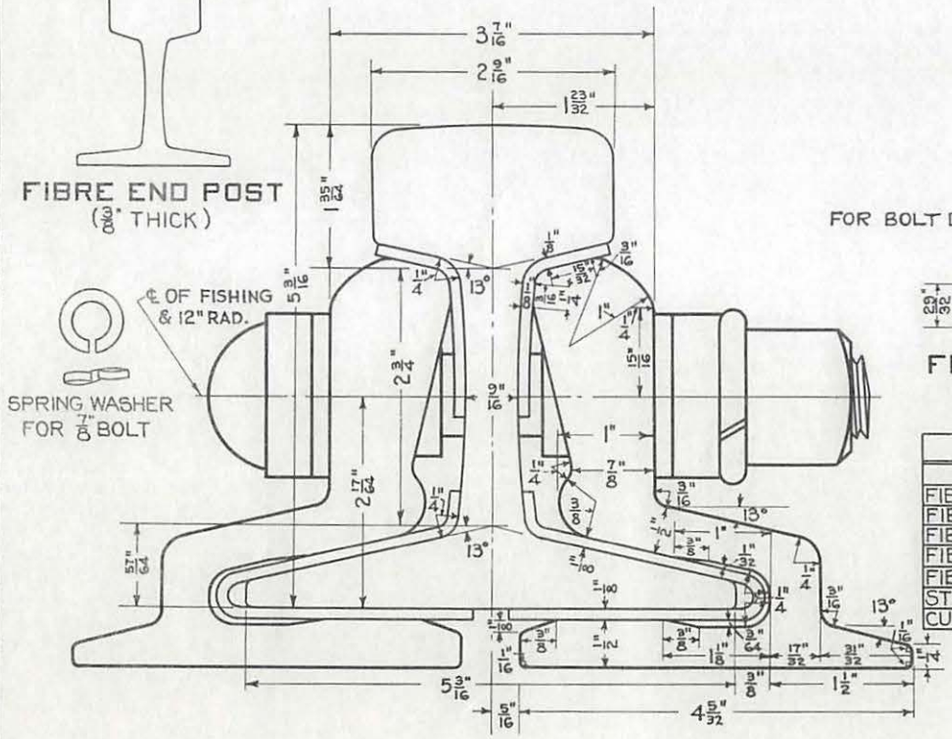




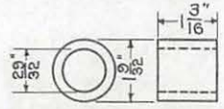
FIBRE BASE PIECE



FIBRE END POST (.080" THICK)

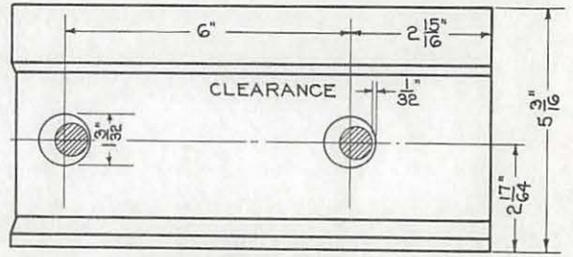


FOR BOLT DIMENSIONS SEE STD. H-38



FIBRE BUSHING

INSULATED PARTS	
NAME	NO.
FIBRE HEAD PIECE	73682-H
FIBRE BASE PIECE	71483-C
FIBRE END POST	9445
FIBRE BUSHING	7626-H
FIBRE WASHER PLATE	7876-D
STEEL WASHER PLATE	7838-C
CUT THREAD BOLT	76421



RAIL DRILLING

BOSTON AND MAINE R. R.

STANDARD CONTINUOUS INSULATED JOINT

85 LB. RAIL

APPROVED

E. M. Fox
ENGINEER OF SIGNALS & COMMUNICATIONS

ENGINEER M. OF W.

CHIEF ENGINEER

PLAN

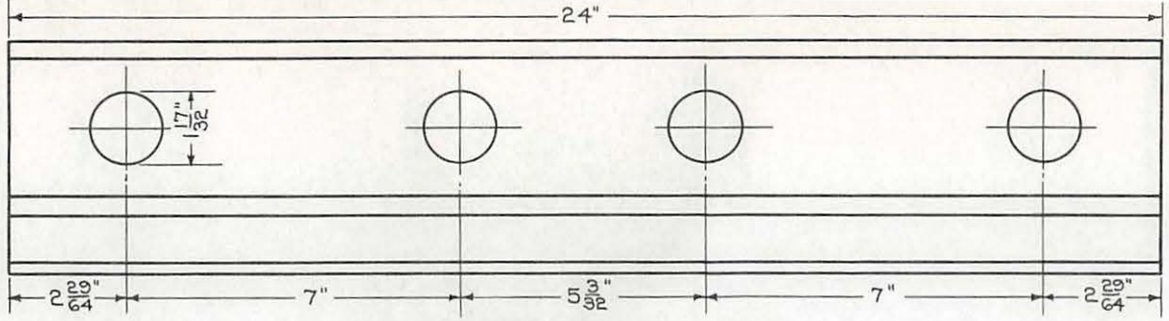
DRAWN E.F.B.
CHECKED J.B.M.
CORRECT J.J.R.

ISSUE	DATE
A	12-10-31
B	5-12-42
C	1-14-57

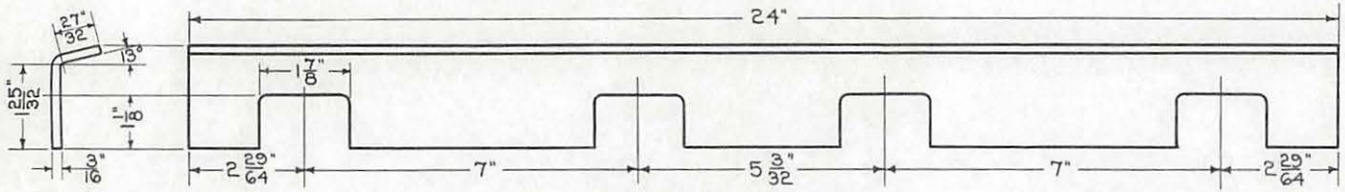
B- BOLT LENGTH CHANGED FIBRE END POST NUMBER

C- ELIMINATED BOLT AND NUT DIMENSION

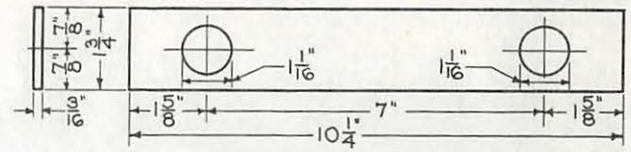
ASSEMBLE JOINTS WITH NUTS AND HEADS ALTERNATED



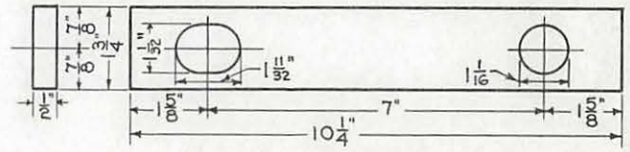
ELEVATION OF JOINT BAR



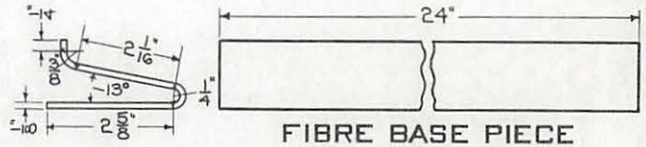
FIBRE HEAD PIECE



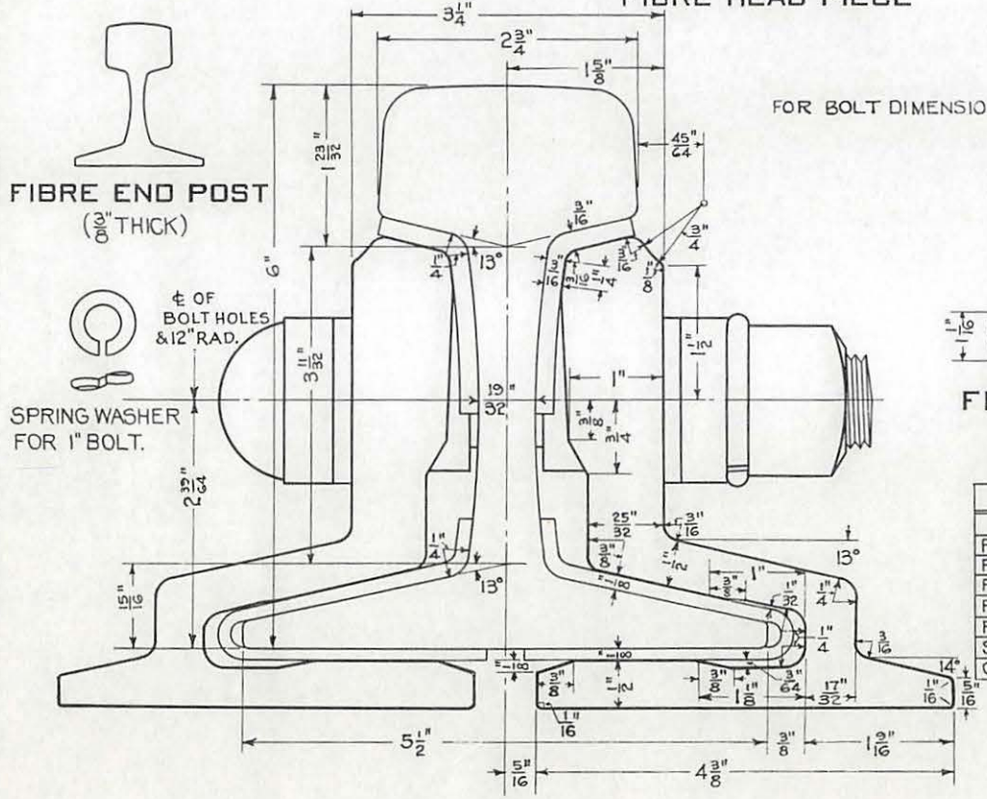
FIBRE WASHER PLATE

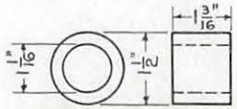


STEEL WASHER PLATE

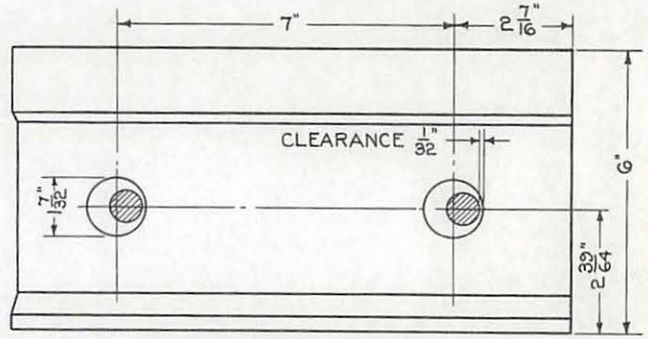


FIBRE BASE PIECE





FIBRE BUSHING



RAIL DRILLING

INSULATED PARTS	
NAME	NO.
FIBRE HEAD PIECE	78731-G
FIBRE BASE PIECE	71483-C
FIBRE END POST	9733
FIBRE BUSHING	7629-D
FIBRE WASHER PLATE	78761-D
STEEL WASHER PLATE	78981-C
CUT THREAD BOLT	76421

BOSTON AND MAINE R. R.

STANDARD

CONTINUOUS INSULATED JOINT

APPROVED 100 LB. RAIL

E. H. Fox
ENGINEER OF SIGNALS & COMMUNICATIONS

ENGINEER M. OF W.

CHIEF ENGINEER

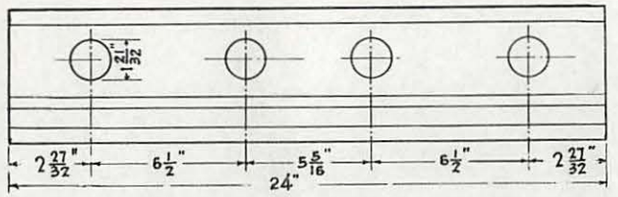
H30

PLAN	
DRAWN H.A.R.	
CHECKED E.M.H.	
CORRECT J.J.R.	

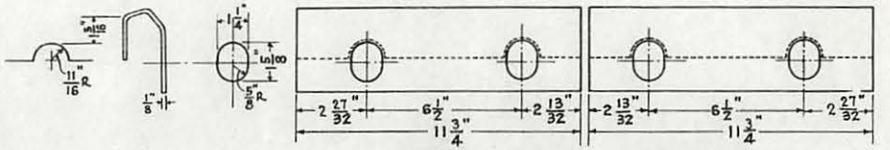
ISSUE	DATE
A	4-10-34
B	6-15-42
C	5-7-45
D	1-14-57

B- LENGTH JOINT BAR CHANGED
C- MODIFICATION OF TOP SECTION OF JOINT BAR AND HEAD PIECES.
D- ELIMINATED BOLT AND NUT DIMENSIONS.

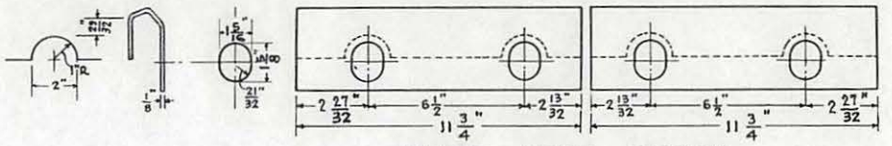
ASSEMBLE JOINTS WITH NUTS AND HEADS ALTERNATE



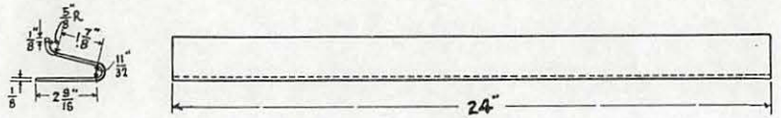
ELEVATION OF JOINT BAR



STEEL HEAD PIECES

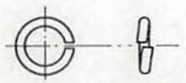


FIBRE HEAD PIECES



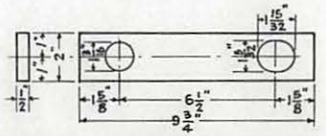
FIBRE BASE PIECE

FIBRE END POST
3/8" THICK

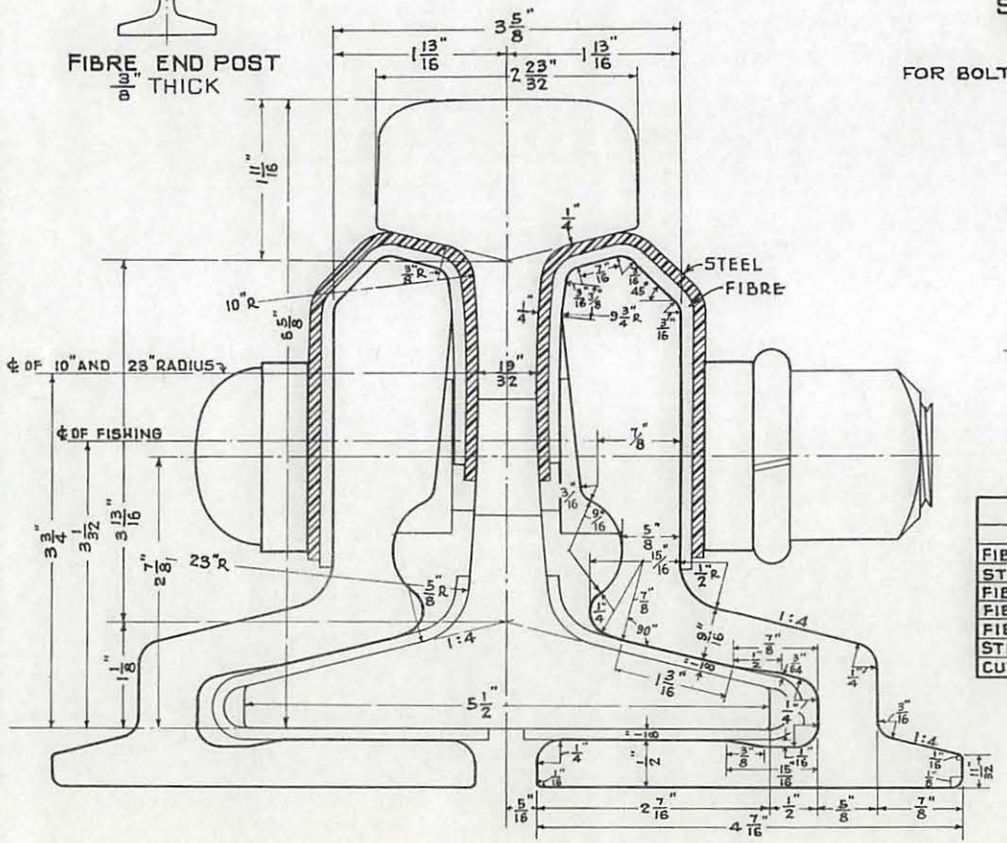


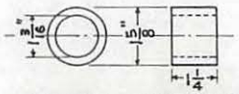
SPRING WASHER FOR 1 1/8" BOLT

FOR BOLT DIMENSIONS SEE STD. H-38

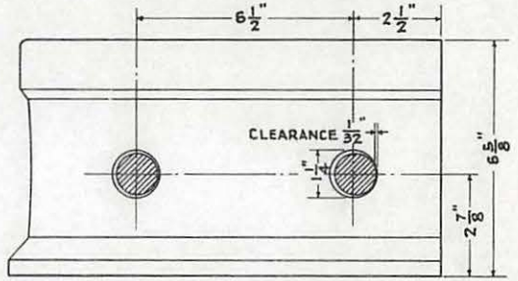


STEEL WASHER PLATE





FIBRE BUSHING



RAIL DRILLING

INSULATED PARTS	
NAME	NO.
FIBRE HEAD PIECE	9834-6
STEEL HEAD PIECE	9835-6
FIBRE END POST	9837
FIBRE BASE PIECE	71483-K2
FIBRE BUSHING	7832-F
STEEL WASHER PLATE	78381-A
CUT THREAD BOLT	76421

BOSTON AND MAINE R.R.

STANDARD

CONTINUOUS INSULATED JOINT

ARMORED TYPE FOR 112 LB. R.E. RAIL

APPROVED

E. N. Fox
ENGINEER OF SIGNALS & COMMUNICATIONS

ENGINEER M. OF W.

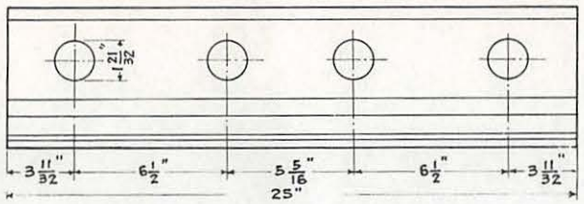
CHIEF ENGINEER

PLAN	
DRAWN H.A.R.	
CHECKED E.M.H.	
CORRECT J.J.R.	
ISSUE	DATE
A	4-10-34
B	1-14-57

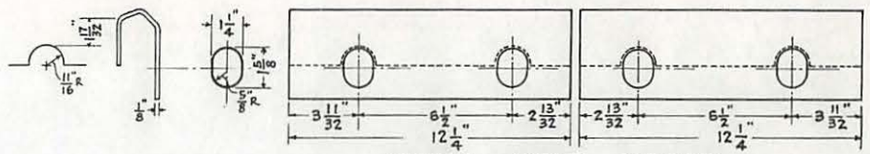
B-ELIMINATED BOLT AND NUT DIMENSIONS

H 32

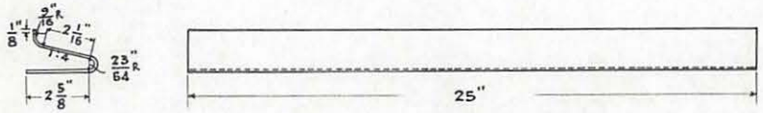
ASSEMBLE JOINTS WITH NUTS AND HEADS ALTERNATE.



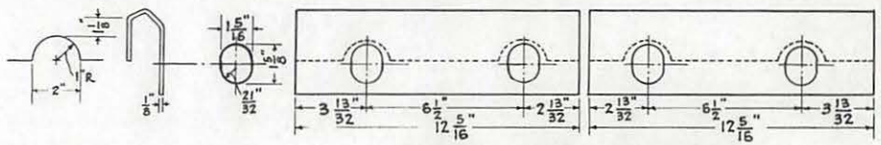
ELEVATION OF JOINT BAR



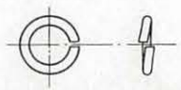
STEEL HEAD PIECES



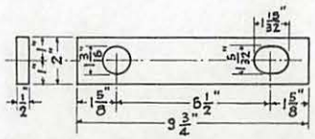
FIBRE BASE PIECE



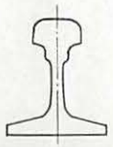
FIBRE HEAD PIECES



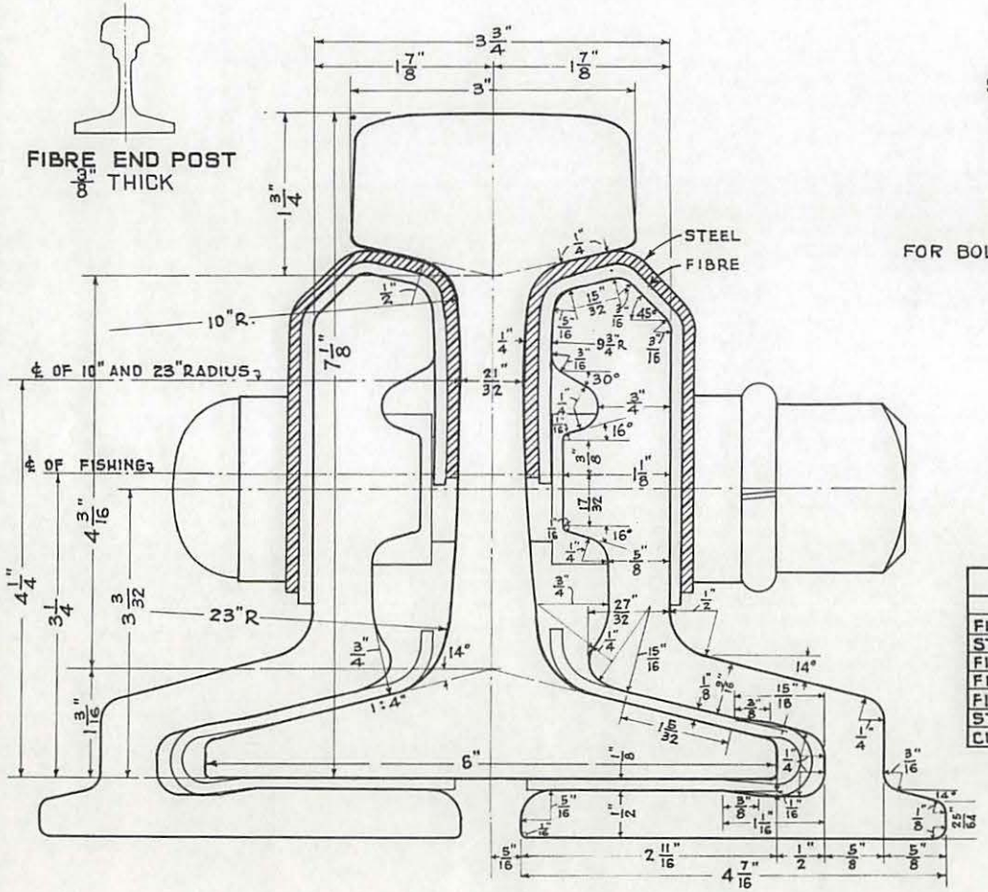
SPRING WASHER FOR 1 1/8" BOLT



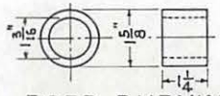
STEEL WASHER PLATE



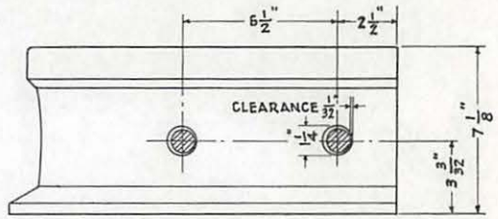
FIBRE END POST 0.03" THICK



FOR BOLT DIMENSIONS SEE STD. H-38



FIBRE BUSHING



RAIL DRILLING

INSULATED PARTS	
NAME	NO
FIBRE HEAD PIECE	9831-6
STEEL HEAD PIECE	9832-6
FIBRE END POST	9838
FIBRE BASE PIECE	71483-P
FIBRE BUSHING	7632-F
STEEL WASHER PLATE	78381-A
CUT THREAD BOLT	76421

BOSTON AND MAINE R.R.

STANDARD

CONTINUOUS INSULATED JOINT

ARMORED TYPE FOR 131 LB R.E. RAIL

APPROVED

E. M. Fox
ENGINEER OF SIGNALS & COMMUNICATIONS

P. K. Dyer
ENGINEER M. OF W.

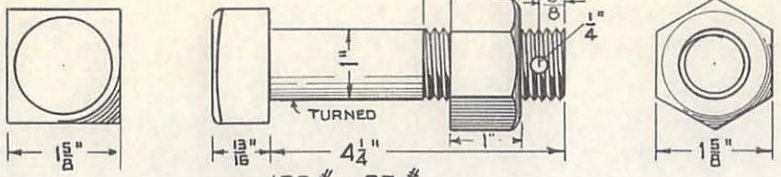
S. H. Phillips
CHIEF ENGINEER

PLAN	
DRAWN	R.H
CHECKED	J.B.
CORRECT	J.J.R

ISSUE	DATE
A	6-1-33
B	5-8-35
C	12-29-47
D	11-18-53

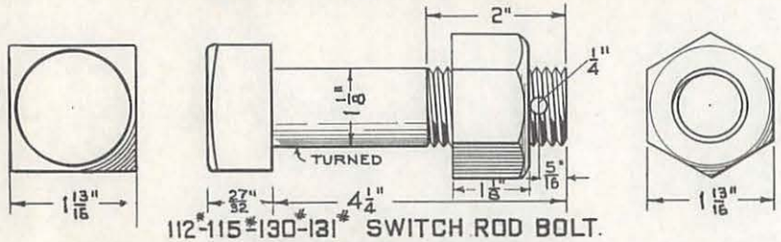
B- 112# & 131# RAIL BOLTS ADDED
C- 115# RAIL ADDED.
D- NO. 15 REDESIGNED

NO. 11



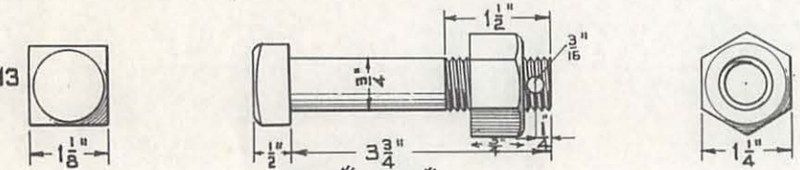
100# - 85# SWITCH ROD BOLT
8 U.S.STD. THREADS PER INCH

NO. 12



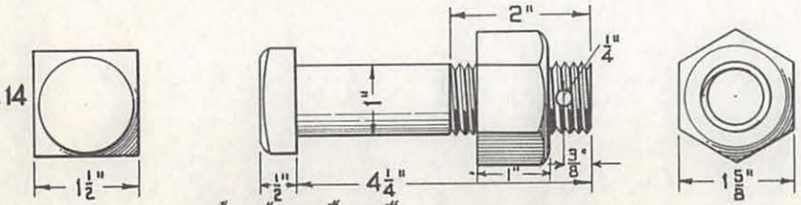
112#-115#-130#-131# SWITCH ROD BOLT.
7 U.S.STD. THREADS PER INCH

NO. 13



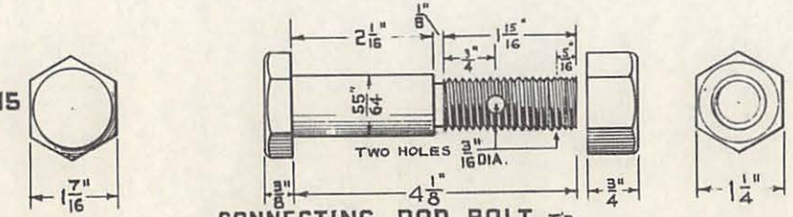
100# - 85# CLIP BOLT
10 U.S.STD. THREADS PER INCH

NO. 14



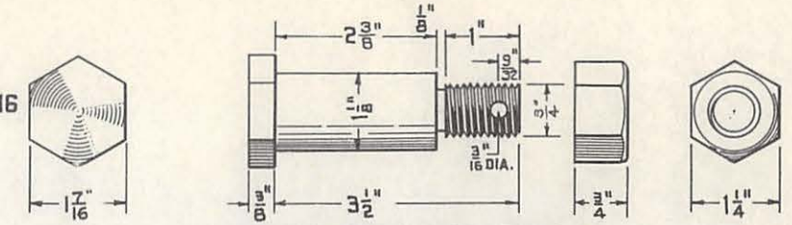
112#-115#-130#-131# CLIP BOLT
8 U.S.STD. THREADS PER INCH

NO. 15



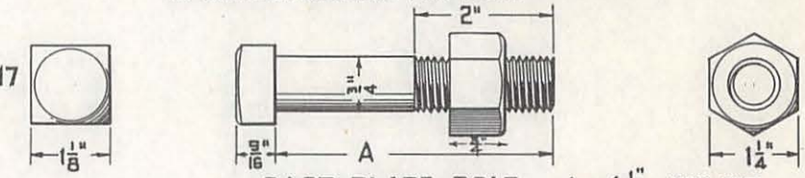
CONNECTING ROD BOLT T.D.
FOR SWITCH END OF 85#-100# SWITCH
10 U.S.STD. THREADS PER INCH

NO. 16



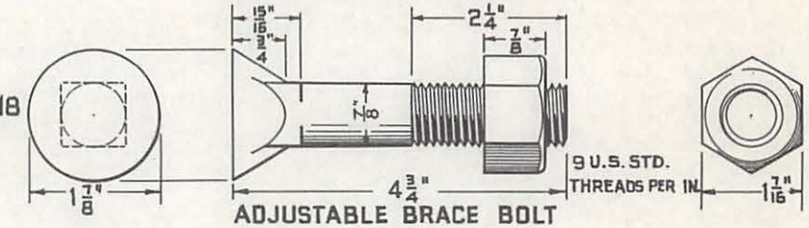
CONNECTING ROD BOLT T.D.
FOR USE ON BOTH ENDS OF ROD ON 112#-115#-130#-131# SWITCHES
" " " STAND END " " " 85 -100 SWITCHES
10 U.S. STD. THREADS PER INCH.

NO. 17



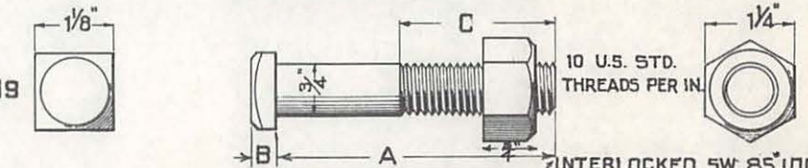
GAGE PLATE BOLT A = 4 1/4" HEX. NUT.
INSULATED SWITCH ROD BOLT A = 3 7/8" SQ. NUT 1 1/4" x 3/4"
10 U.S.STD. THREADS PER INCH.

NO. 18



ADJUSTABLE BRACE BOLT

NO. 19



SWITCH POINT BOLT
FOR SIGNAL FRONT ROD CONNECTION HOLES.

	A	B	C
INTERLOCKED SW. 85#,100#	3 3/4"	3/8"	2 1/2"
" 112#,115#,130#,131#	4"	1/2"	2 1/2"
NON " 85#,100#	2 3/4"	3/8"	1 7/8"
" " 112#,115#,130,131#	3"	1/2"	1 7/8"

SPECIFICATIONS

FOR STANDARD SWITCH BOLTS DESIGN AS SHOWN.
THREADS - CUT THREADS U.S. STD.
MATERIALS - CHEMICAL AND PHYSICAL REQUIREMENTS, TOLERANCE, MANUFACTURE, INSPECTION AND MARKING AS PER A·R·E·A SPECIFICATIONS.

BOSTON AND MAINE R.R.

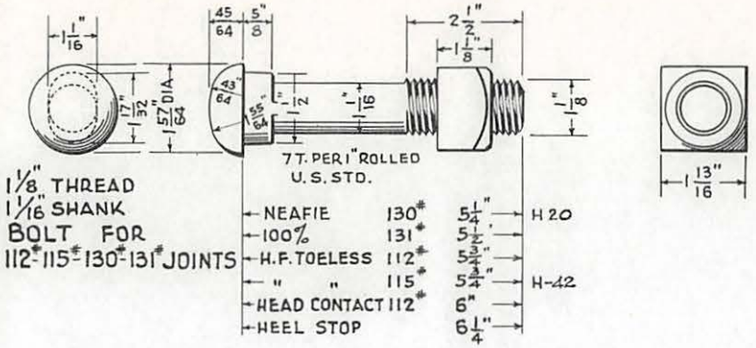
STANDARD SWITCH BOLTS

APPROVED
E. M. Fox
ENGINEER OF SIGNALS AND TELEGRAPH
K.F. Field
ENGINEER M. OF W.
CHIEF ENGINEER

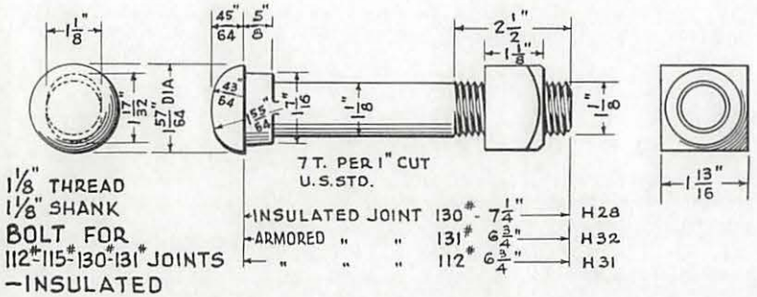
PLAN	
DRAWN	H. A. R.
CHECKED	F. McG.
CORRECT	F. W. H
ISSUE	DATE
D	3-31-50
E	1-14-57

D - REDRAWN OMITTING M.C.R.R.

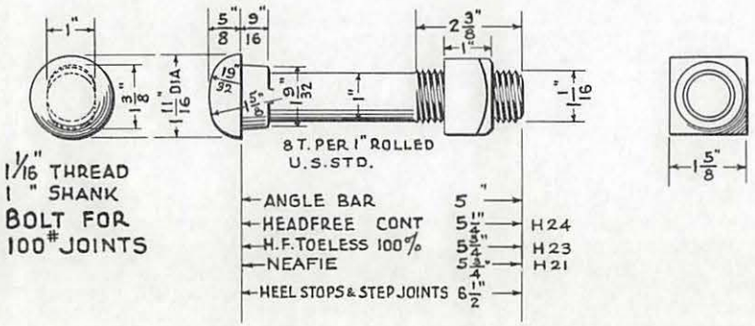
E CHANGE IN DIMENSIONS



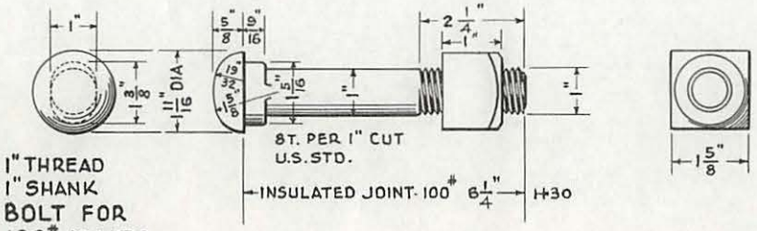
1 1/8" THREAD
1 1/16 SHANK
BOLT FOR
112#-115#-130#-131# JOINTS



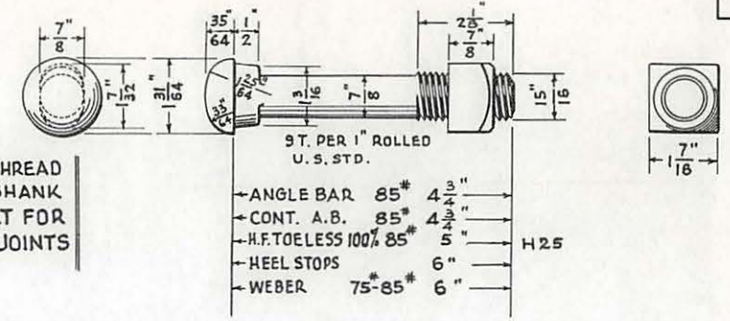
1 1/8" THREAD
1 1/8" SHANK
BOLT FOR
112#-115#-130#-131# JOINTS
-INSULATED



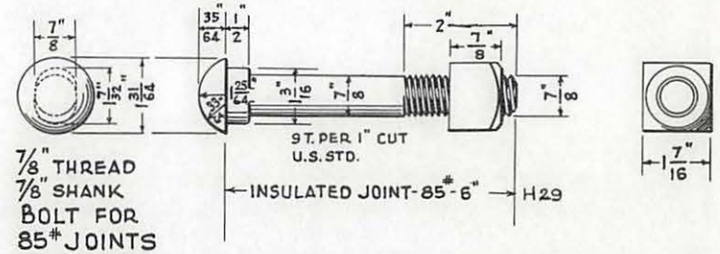
1 1/16" THREAD
1 " SHANK
BOLT FOR
100# JOINTS



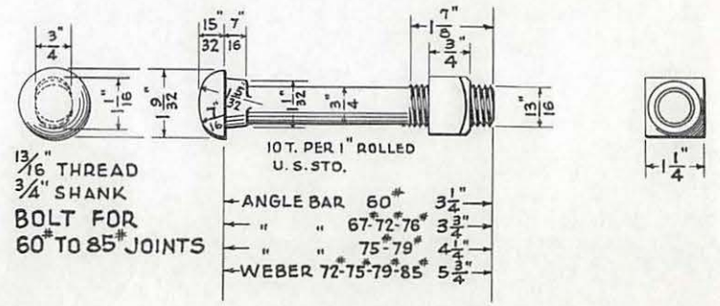
1" THREAD
1" SHANK
BOLT FOR
100# JOINTS
-INSULATED



15/16" THREAD
7/8" SHANK
BOLT FOR
85# JOINTS



7/8" THREAD
7/8" SHANK
BOLT FOR
85# JOINTS
-INSULATED



13/16" THREAD
3/4" SHANK
BOLT FOR
60# TO 85# JOINTS

SPECIFICATIONS

FOR QUENCHED CARBON STEEL DESIGN - AS SHOWN.
MATERIAL - CHEMICAL AND PHYSICAL REQUIREMENTS, TOLERANCE MANUFACTURE INSPECTION AND MARKING AS PER A.R.E.A. SPECIFICATIONS 1946. GRADE 2.

BOLTS TO HAVE FREE THREAD FIT AND TO BE FITTED WITH HIGH STRENGTH NUTS.

BOSTON AND MAINE R. R.

STANDARD

TRACK BOLTS

FOR RAIL JOINTS

APPROVED:

E. H. Fox
ENGINEER OF SIGNALS & COMMUNICATIONS

H. Dyer
ENGINEER M. OF W.

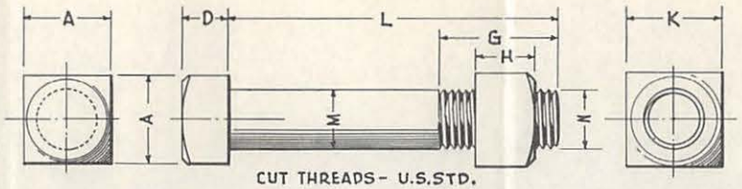
S. H. Gilbert
CHIEF ENGINEER

PLAN	
DRAWN	H.A.R.
CHECKED	F.W.H.
CORRECT	J.J.R.

ISSUE	DATE
A	2-1-39
B	1-24-52
C	9-20-52
D	3-1-54

B-TABLE OF FROG AND TRACK BOLTS FOR SELF GUARDED FROGS.
C-ADOPTION OF CURRENT A.R.E.A. SPECIFICATIONS.
D-ELIMINATED ADJUSTABLE RAIL BRACE BOLT.

FROG AND TRACK BOLTS FOR SELF GUARDED FROGS



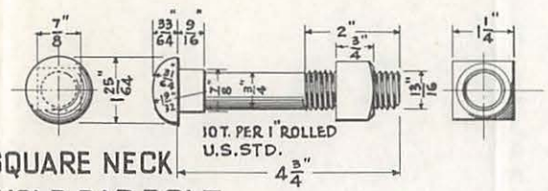
CUT THREADS - U.S.STD.

SQUARE HEAD RIGID FROG BOLT

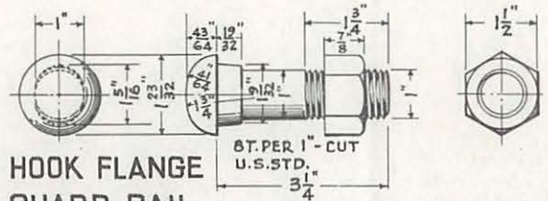
RAIL WT.	HEAD A	HEAD D	NUT H	NUT K	BOLT G	BOLT L	BOLT M	BOLT N	T. PER 1"
85	1 1/16"	7/8"	1 1/8"	1 3/16"	2 1/2"	VARIES	1 1/8	1 1/8	7
100	1 7/8"	15/16"	1 1/4"	2"	2 1/2"	BY 1/2"	1 1/4	1 1/4	7
112 130-131	2 1/16"	1"	1 3/8"	2 3/16"	2 1/2"	STEPS	1 3/8	1 3/8	6

FROG BOLT LENGTH		SQUARE-HEAD 7"	7½	8"	SQUARE-NUT 8½"	9"	9½"	10"
DIAM.	RAIL WT.	FROG NUMBERS						
7/8"	85"	4,7,9	5,6,10	8	4,7,9	5,6,8,10		
1"	100"	5,7	6,10	8,9	5,7	6,10	9	8
1"	112"		7,8,10	7,10	8			
1 1/8"	130"		8	10,12	8	10,12		

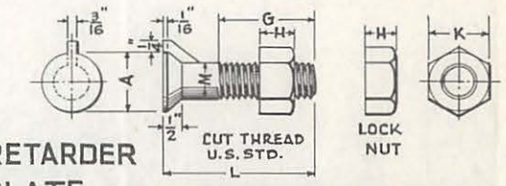
TRACK BOLT LENGTH		BUTTON-HEAD, SQUARE-NUT, OVAL-SHANK 9"	9½"	10"	10½"	11"	11½"	12"	12½"	13"	13½"	14"	14½"	15½"
DIAM	RAIL WT.	FROG NUMBERS												
7/8"	85"	7	6,8	5,7,9,10	6,7,8,9,10	4,5,8,9,10	6,7,10	8,9	4,5,6		5	4		4
1"	100"			6	7,8	5,6,9,10	7,8,9	5,6,8,9,10	7,10	5,6,8,9,10	7		5	
1"	112"				7		7	8,10	7	8,10	7,8,10	8,10		
1 1/8"	130"						8		8,10,12	8,10,12	8,10,12	10,12		



SQUARE NECK ANGLE BAR BOLT
(N.Y.C. & C.&M.)

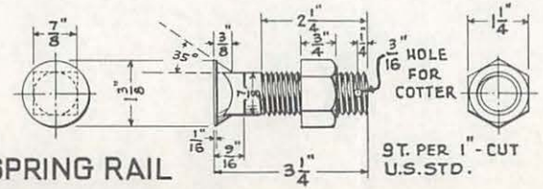


HOOK FLANGE GUARD RAIL PLATE BOLT

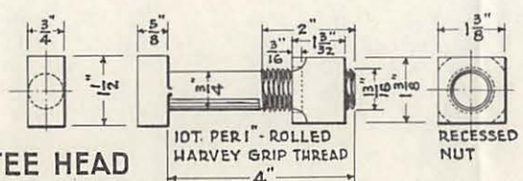


RETARDER PLATE BOLT
(FOR MODEL 28)

HEAD A	NUT H	NUT K	LOCK NUT H	BOLT G	BOLT L	BOLT M	T. PER 1"
1 1/4"	3/4"	1 1/4"	3/4"	2"	3 1/4"	3/4"	10
1 5/8"	1"	1 5/8"	5/8"	2 1/4	3 1/4"	1"	8
1 5/8"	1"	1 5/8"	5/8"	2 1/4	4 1/4"	1"	8



SPRING RAIL FROG PLATE BOLT



TEE HEAD ANGLE BAR BOLT

SPECIFICATIONS.
FOR QUENCHED CARBON STEEL DESIGN - AS SHOWN.
MATERIAL - CHEMICAL AND PHYSICAL REQUIREMENTS, TOLERANCE, MANUFACTURE, INSPECTION, AND MARKING AS PER CURRENT A.R.E.A. SPECIFICATIONS

BOSTON AND MAINE R.R.

STANDARD

FROG BOLTS

AND OTHER BOLTS INDICATED IN SUB TITLES

APPROVED:

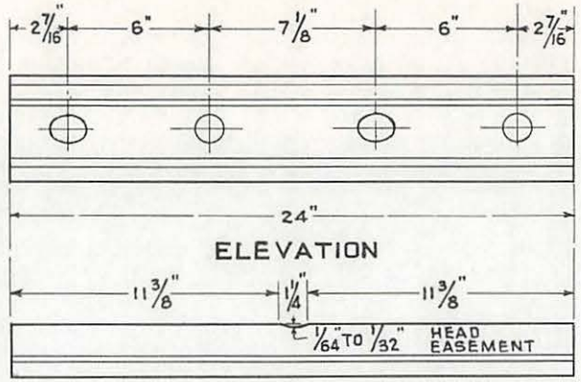
H. F. Fifield
ENGINEER M. OF W.

S. J. Phillips
CHIEF ENGINEER

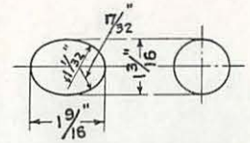
PLAN	
DRAWN H.A.R.	
CHECKED F.W.H	
CORRECT J.P.C.	
ISSUE	DATE
A	2-10-49
B	1-14-57

B- ELIMINATED BOLT AND NUT DIMENSIONS

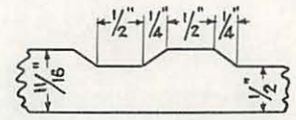
H42



TOP VIEW



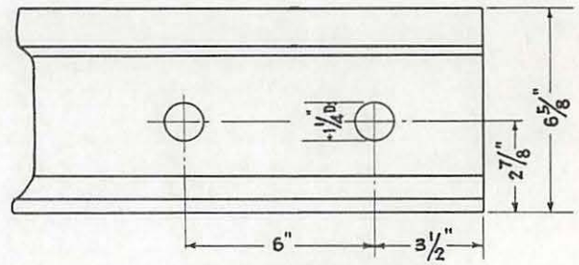
BOLT HOLES
(ALTERNATE OVAL AND ROUND)



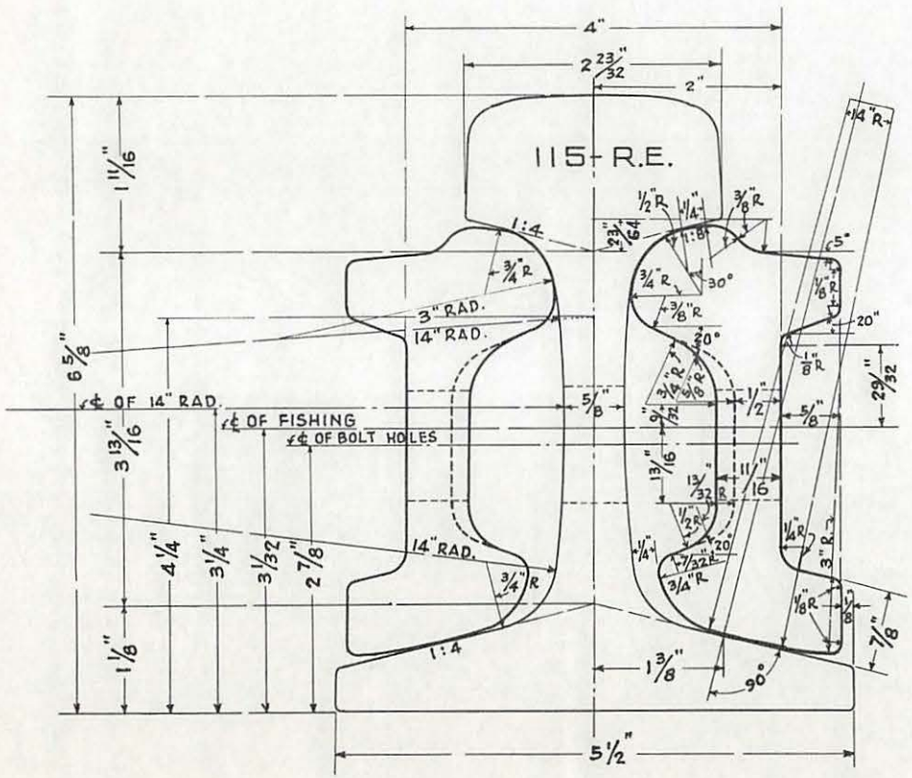
LONGITUDINAL
SECTION OF WEB

FOR BOLT DIMENSIONS SEE STD. H-38

SPRING WASHER
FOR 1 1/8" BOLT



RAIL DRILLING



BOSTON AND MAINE R. R.

STANDARD

HEADFREE 100% JOINT

115 LB. R.E. RAIL

APPROVED:

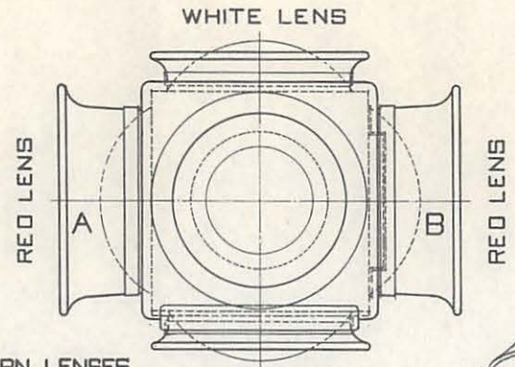
ENGINEER M. OF W.

CHIEF ENGINEER

J1

PLAN	
DRAWN BY E.R.M	
CHECKED BY E.L.B.	
CORRECT J.J.R.	
ISSUE	DATE
A	6-10-30
B	10-20-30
C	1-11-34
D	6-5-35
E	3-14-42
F	2-20-53

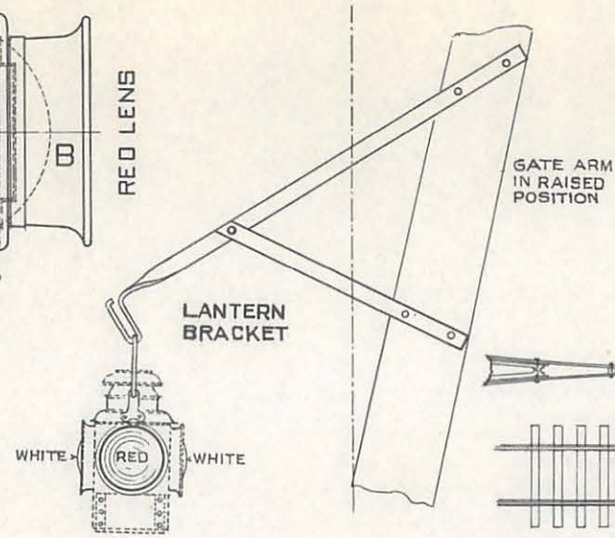
B- SLOT.
C- LANTERN HANGER CHANGES.
D- LANTERN ON EACH GATE ARM.
E- LAMP NO.
F- NO. 23 LONG TIME BURNER



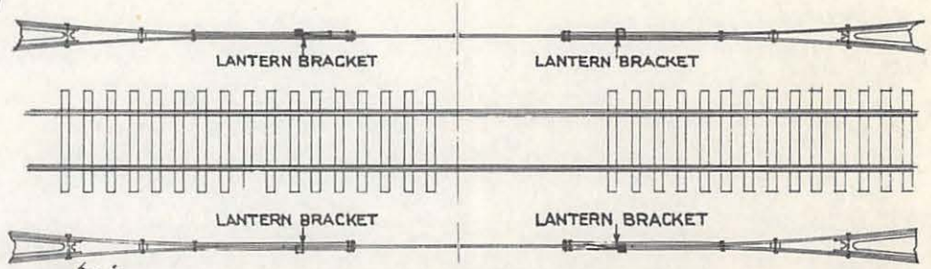
LANTERN LENSES

No 1 TYPE FOR CROSSING GATE LENSES "A" AND "B" RED.
No. 2 TYPE FOR SLOW BOARD. REDUCE SPEED BOARD LENSES "A" YELLOW "B" BLANKED.*
No 3 TYPE FOR RESUME SPEED BOARD LENSE "A" GREEN "B" BLANKED.*
No 4 TYPE FOR INTERTRACK DOUBLE BOARD LENSE "A" GREEN "B" YELLOW.

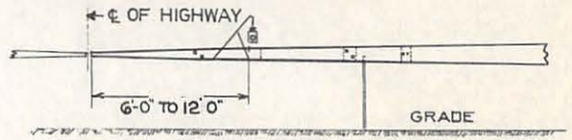
* PLACE TIN DISC BACK OF LENS TO BE BLANKED.



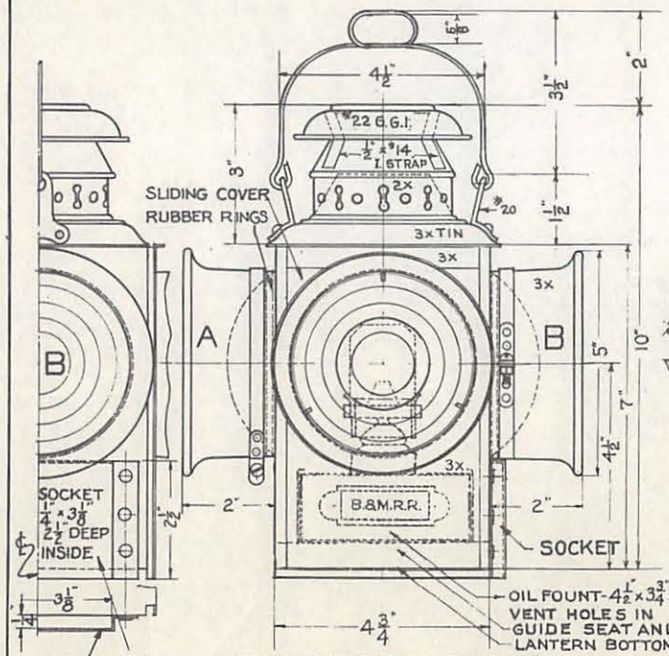
LANTERN
MATERIAL GALVANIZED IRON AND TIN PLATE.
WEIGHTS AS SHOWN ON DRAWING.
PAINTING BLACK. LENSES 4" DIAMETER, 2 RED, 2 WHITE.
OIL FOUNT FITTED WITH NO. 23 LONG TIME BURNER WITH ¼" ROUND WICK.
HEAVY "A" COLLAR, GLASS CHIMNEY AND WIRE PULL.
FOUNT TO BE FILLED BY REMOVING BURNER.
LOCATION OF LANTERN- ONE LANTERN ON EACH GATE ARM AT POINT 6'-0" TO 12'-0" FROM END OF GATE AS INDICATED ON GATE ARM PLAN AND ELEVATION.
NORMAL POSITION OF LANTERN TO SHOW RED PARALLEL TO HIGHWAY. WHEN HIGHWAY CROSSES THE RAILROAD AT AN ACUTE ANGLE CHANGE THE TWIST OF THE HANGER SO AS TO BRING RED LENSES PARALLEL TO HIGHWAY.
NOTE. LANTERNS FOR CROSSING GATES AND SLOW BOARDS ARE THE SAME WITH EXCEPTION OF LENSES.



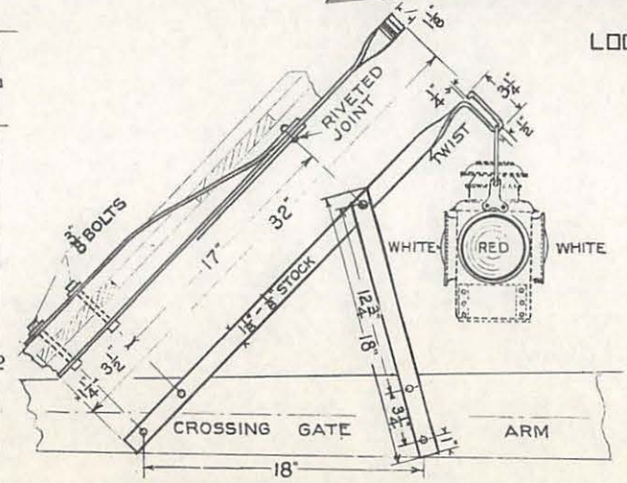
LOCATION OF LANTERN BRACKETS ON GATES



ELEVATION



ELEVATION OF LANTERN



LANTERN BRACKET

NOTE

LANTERN SHOWN AS MADE BY LOVELL-DRESSEL CO. INC. No. 255 CROSSING GATE LAMP. APPROVED FOR USE. OTHER TYPE OF SAME GENERAL DESIGN WILL BE ACCEPTED WHEN APPROVED BY CHIEF ENGINEER.

BOSTON & MAINE R. R.

STANDARD CROSSING GATE LANTERN AND HANGER

APPROVED

H. F. Fifield
ENGINEER M/OF W.

S. T. Phillips
CHIEF ENGINEER

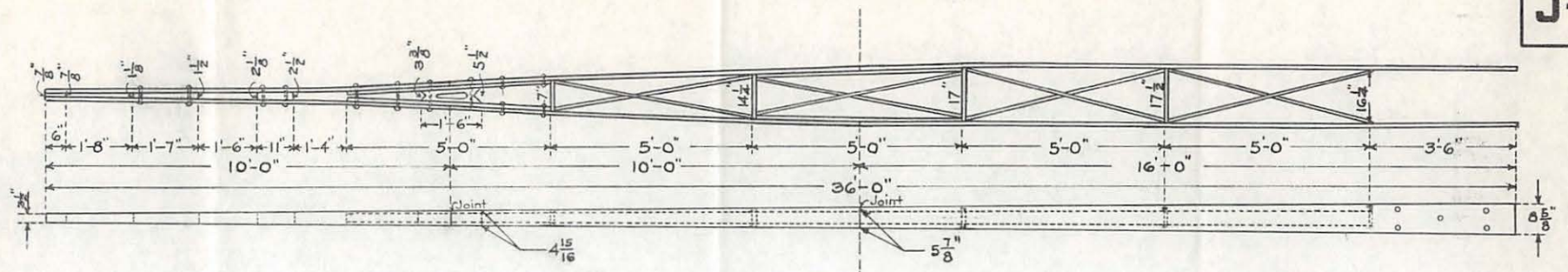
J-2

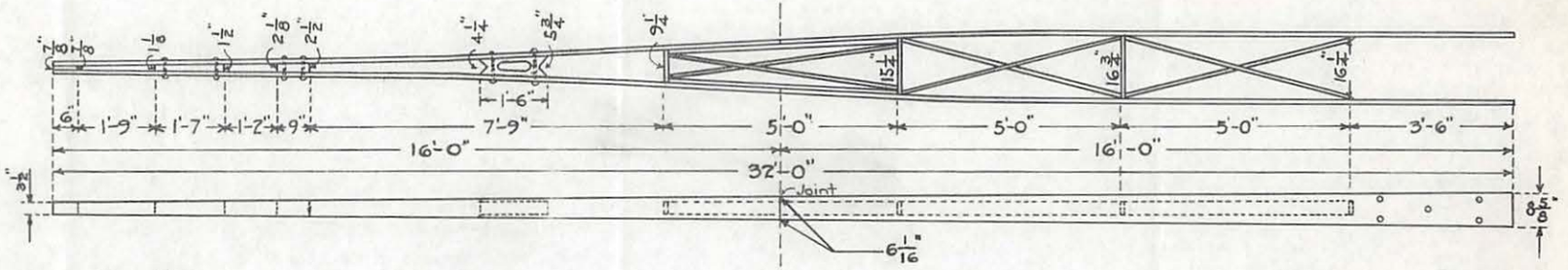
PLAN	
DRAWN BY	CMH.
CHECKED	R.B.H.
CORRECT	F.W.H.

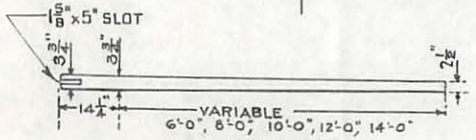
ISSUE	DATE
A	6-15-42
B	5-2-53
C	6-3-55

B - INCREASED SLOT TO 1⅝" IN EXTENSION TIP

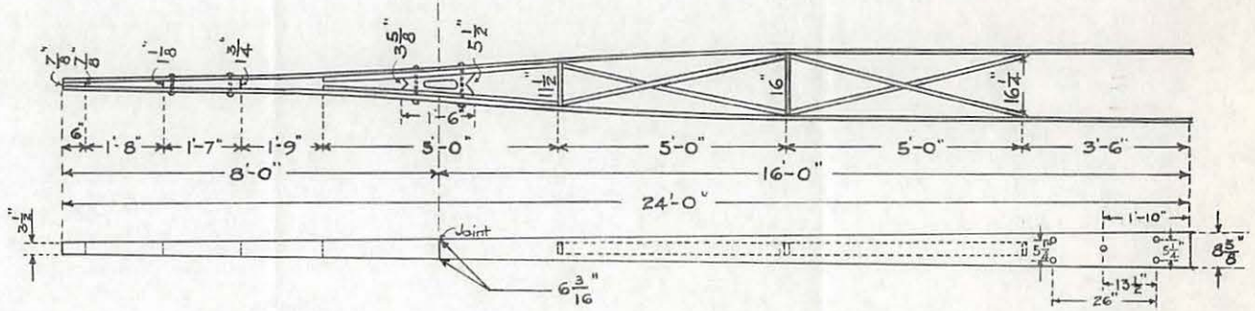
C - ADDED WIDTH OF TIP ON BUTT END

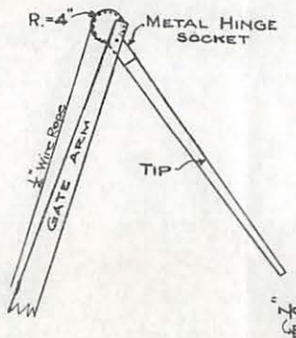


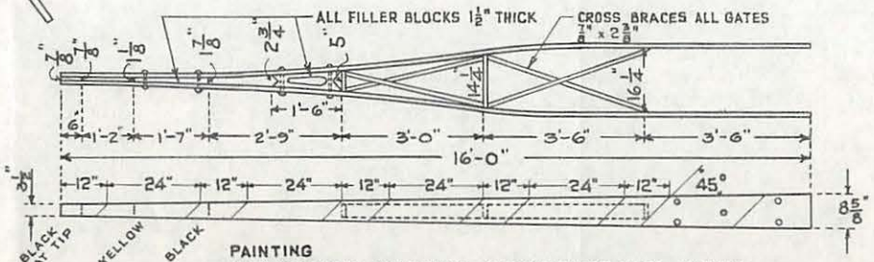


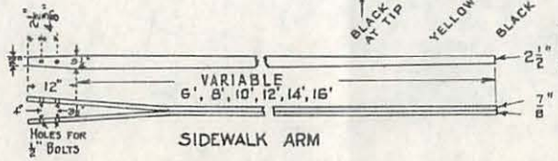


EXTENSION TIP









SIDEWALK ARM

PAINTING

GATE ARM WOOD WORK WHITE - B & M R R STD. A-5-27, 2 COATS.

OUTSIDE FACES OF GATE ARM - BLACK DIAGONAL STRIPES OVER WHITE PAINT, 1 COAT S-W BULLETIN PAINT #45050 OR EQUAL. YELLOW DIAGONAL STRIPES OVER WHITE PAINT, 1 COAT S-W BULLETIN #45049 OR EQUAL.

IRON WORK - BLACK - B & M R R STD. A-10-27

BOSTON AND MAINE R. R.

STANDARD HIGHWAY CROSSING GATE

APPROVED

H. S. Ashley
ENGINEER M. OF W.

CHIEF ENGINEER

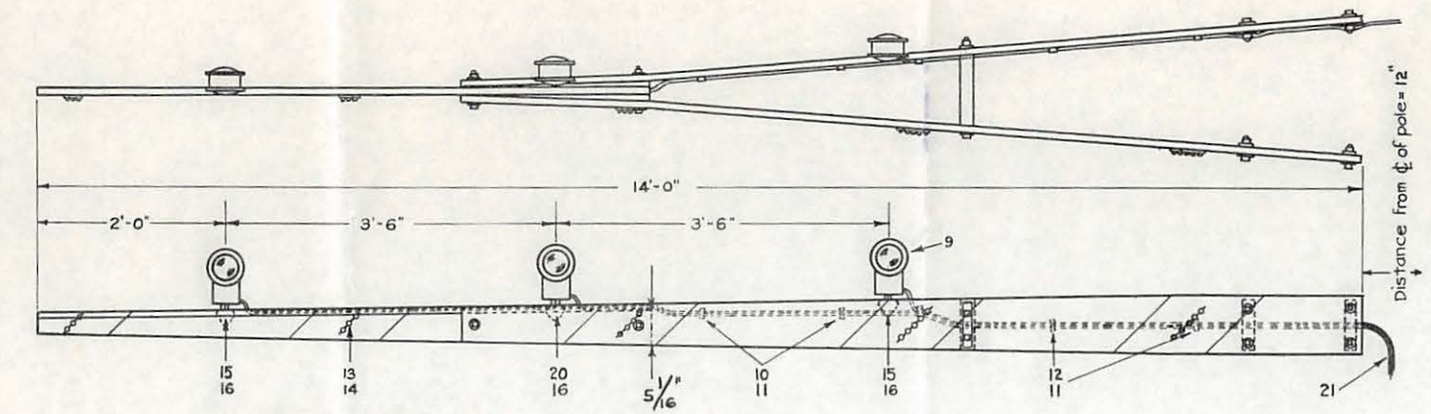
J-3

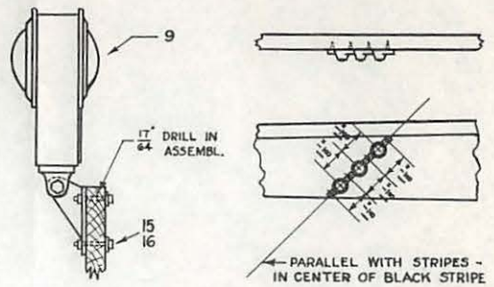
PLAN	
DRAWN BY	JMH
CHECKED	H.G.C.
CORRECT	E.M.F.

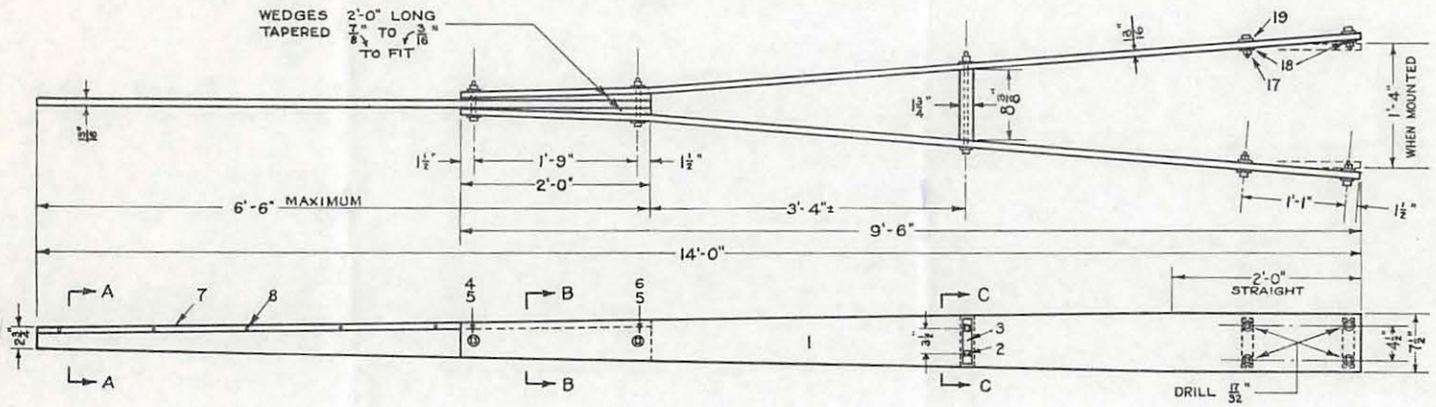
ISSUE	DATE
A	6-15-42
B	3-30-45
C	7-11-55

B- PAINTING CHANGED TO AGREE WITH STD. HIGHWAY CROSSING GATE-J2

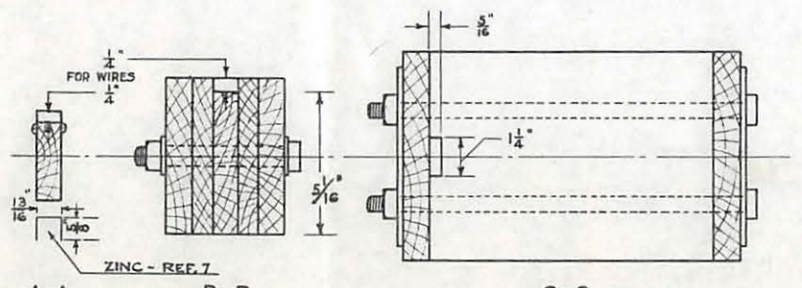
C- ADDED WIDTH OF TIP ON BUTT-END

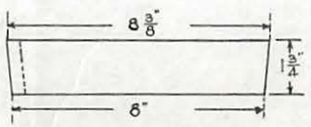




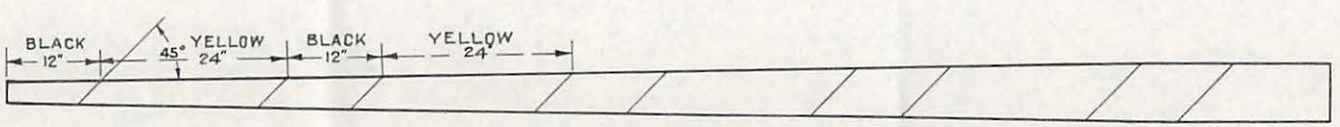


BILL OF MATERIAL		
REF.	NO. REQD	ITEM
1	AS NEEDED	SUGAR PINE - GRADE "C" SELECT
2	2	BOLT. 1/2" × 10 3/4" SQ. HD. SQ. NUT
3	2	PLATE. 1 1/4" × 6" × 1/16", 9/16" HOLES
4	1	BOLT. 3/8" × 3 1/2" SQ. HD. & SQ. NUT
5	4	WASHER FOR 3/8" BOLT
6	1	BOLT. 3/8" × 4 3/4" SQ. HD. & SQ. NUT
7	1	CHANNEL
8	9	SCREW. #8. 3/4" RD. HD. WD. BR.
9	3	LAMP COMPLETE
10	2	CLEAT - 4 WIRE
11	5	SCREW. #8. 1/2" RD. HD. WD.
12	3	CLEAT - 6 WIRE
13	20	REFLECTOR BUTTONS
14	25	SCREW. #4. 3/8" RD. HD. WD. BR.
15	6	BOLT. 1/4"-20 × 1 1/2" SQ. HD. SQ. NUT
16	9	WASHER FOR 1/4" BOLT
17	8	BOLT. 1/2"-13 × 2" SQ. HD. HEX. NUT
18	4	PLATE 1 1/4" × 7 3/8" × 1/16", 9/16" HOLES
19	8	WASHER FOR 1/2" BOLT
20	3	BOLT. 1/4"-20 × 3" SQ. HD. SQ. NUT
21	85'	WIRE. #16 D.B. FIX.





Top View of Separator



PAINT ARM AS SHOWN - BOTH SIDES AND EDGES

PAINTING:- GATE ARM WOOD WORK WHITE - B&M R R STD. A-5-27, 2 COATS.
OUTSIDE FACES OF GATE ARM BLACK DIAGONAL STRIPES, OVER WHITE PAINT, 1 COAT S-W BULLETIN PAINT #45050 OR EQUAL.
YELLOW DIAGONAL STRIPES, OVER WHITE PAINT, 1 COAT S-W BULLETIN PAINT #45049 OR EQUAL.
IRON WORK - BLACK - B & M R R STD. A-10-27.

BOSTON AND MAINE R. R.

AUTOMATIC HIGHWAY CROSSING GATE ARM

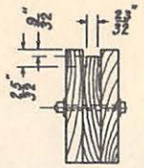
APPROVED

E. M. Fox
ENGINEER OF SIGNALS AND TELEGRAPH

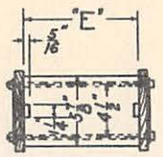
CHIEF ENGINEER

PLAN	
DRAWN BY: F. B. W.	
CHECKED BY: G.W.H.	
CORRECT: F W H	
ISSUE	DATE
A	1-15-48

J5
A



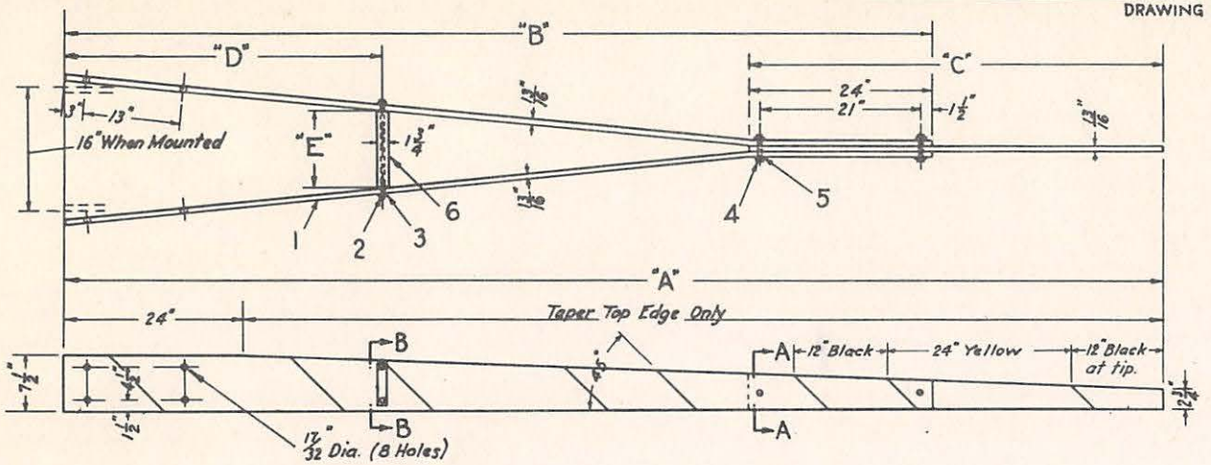
SECTION AA



B B

BILL OF MATERIAL & REFERENCE TABLE													
NAME	REF.	DRAW. No.	GR. 1	GR. 2	GR. 3	GR. 4	GR. 5	GR. 6	GR. 7	GR. 8	GR. 9	GR. 10	GR. 11	GR. 12
1" SUGAR PINE, GRADE "C" SELECT.	1	BD. FT.	AS REQ.	AS REQ.	AS REQ.	AS REQ.	AS REQ.	AS REQ.	AS REQ.	AS REQ.	AS REQ.	AS REQ.	AS REQ.	AS REQ.
BOLT & NUT ½" x 13"	2	SEE GROUP COLUMNS	2 0592-11	2 0592-11	2 0592-11	2 0592-11	2 0592-11	2 0118	2 0369	2 0369	2 0369	2 34258	2 34258	2 34258
PLATE ⅛" x 1½" x 5½"	3	35845-96	2	2	2	2	2	2	2	2	2	2	2	2
BOLT ⅜"-16 x 3" SQ. HD. & NUT	4	0238	2	2	2	2	2	2	2	2	2	2	2	2
WASHER 7/16" x 1" x 5/64" THICK	5	626-44	4	4	4	4	4	4	4	4	4	4	4	4
2" SUGAR PINE, GRADE "C" SELECT.	6	BD. FT.	AS REQ.	AS REQ.	AS REQ.	AS REQ.	AS REQ.	AS REQ.	AS REQ.	AS REQ.	AS REQ.	AS REQ.	AS REQ.	AS REQ.
NOMINAL LENGTH (FROM ℄ OF POLE)			13'-0"	14'-0"	15'-0"	16'-0"	17'-0"	18'-0"	19'-0"	20'-0"	21'-0"	22'-0"	23'-0"	24'-0"
DIMENSIONS "A"			12'-0"	13'-0"	14'-0"	15'-0"	16'-0"	17'-0"	18'-0"	19'-0"	20'-0"	21'-0"	22'-0"	23'-0"
DIMENSIONS "B"			9'-6"	9'-6"	9'-6"	9'-6"	9'-6"	11'-6"	13'-6"	13'-6"	13'-6"	15'-6"	15'-6"	15'-6"
DIMENSIONS "C"			4'-6"	5'-6"	6'-6"	7'-6"	8'-6"	7'-6"	6'-6"	7'-6"	8'-6"	7'-6"	8'-6"	9'-6"
DIMENSIONS "D"			3'-6"	3'-6"	3'-6"	3'-6"	3'-6"	3'-6"	4'-0"	4'-0"	4'-0"	4'-0"	4'-0"	4'-0"
DIMENSIONS "E"			8½"	8½"	8½"	8½"	8½"	9"	10"	10"	10"	12"	12"	12"

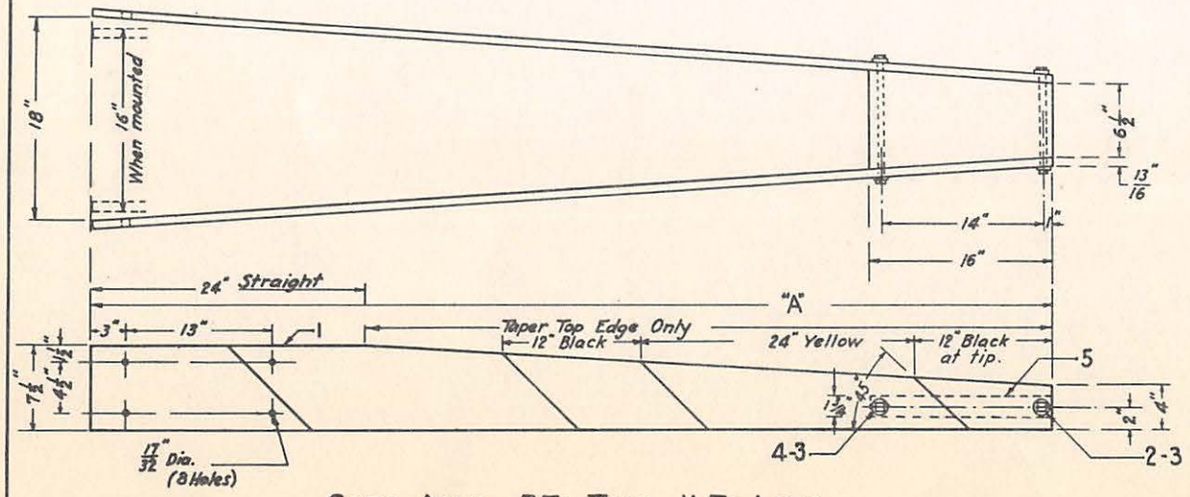
DRAWING NUMBERS REFER TO FILE 321.5



GATE ARMS - 12 FT. THRU 23 FT. LONG

GENERAL NOTES:-

PAINTING:- PAINT ARM AS SHOWN - BOTH SIDES AND EDGES.
GATE ARM WOOD WORK - WHITE, B.&M.R.R. STD. A-5-27, 2 COATS.
OUTSIDE FACES OF GATE ARM - BLACK DIAGONAL STRIPES OVER WHITE PAINT, 1 COAT S-W BULLETIN PAINT #45050 OR EQUAL.
YELLOW DIAGONAL STRIPES, OVER WHITE PAINT, 1 COAT S-W BULLETIN PAINT #45049 OR EQUAL.
IRON WORK - BLACK - B.&M.R.R. A-10-27.



GATE ARMS - 7 FT. THRU 11 FT. LONG

Note:-
The signing of this plan by the officers of the Boston and Maine Railroad denotes, that the appliance shown hereon, while of satisfactory quality, is acceptable for purchase and use by the railroad, but no other responsibility is implied or assumed.

BILL OF MATERIAL & REFERENCE TABLE							
NAME	REF.	DRAW. No.	GR. 1	GR. 2	GR. 3	GR. 4	GR. 5
1" SUGAR PINE, GRADE "C" SELECT.	1	BD. FT.	AS REQ.	AS REQ.	AS REQ.	AS REQ.	AS REQ.
BOLT, ½ x 9" SQ. HD., HEX. NUT	2	0592-8	1	1	1	1	1
WASHER 33/64 I.D. 1¼ O.D. 3/32" THICK	3	626-85	4	4	4	4	4
BOLT ½ x 11" SQ. HD. HEX NUT	4	0592-11	1	1	1	1	1
2" SUGAR PINE, GRADE "C" SELECT.	5	BD. FT.	AS REQ.	AS REQ.	AS REQ.	AS REQ.	AS REQ.
NOMINAL LENGTH (FROM ℄ OF POLE)			8'-0"	9'-0"	10'-0"	11'-0"	12'-0"
DIMENSION "A"			7'-0"	8'-0"	9'-0"	10'-0"	11'-0"

BOSTON AND MAINE R. R.

STANDARD

GATE ARMS - 7 FT. THRU 23 FT.

FOR AUTOMATIC HIGHWAY CROSSING GATES

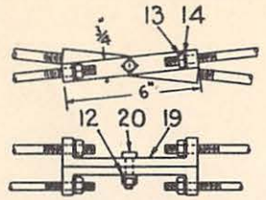
APPROVED

E. N. Fox
ENGINEER SIGNALS & TELEGRAPH

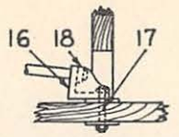
H. F. Field
ENGINEER M. OF W.

CHIEF ENGINEER

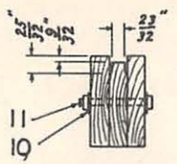
PLAN	
DRAWN BY: F. B. W.	
CHECKED BY: EMH.	
CORRECT: FWH	
ISSUE	DATE
A	1-15-48



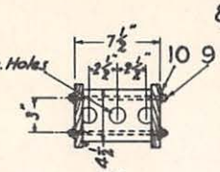
ENLARGED VIEW OF TURNBUCKLE



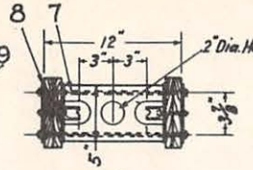
ENLARGED VIEW OF TIE ROD CLIP



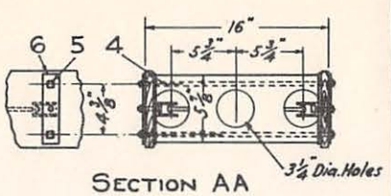
DD



CC



BB

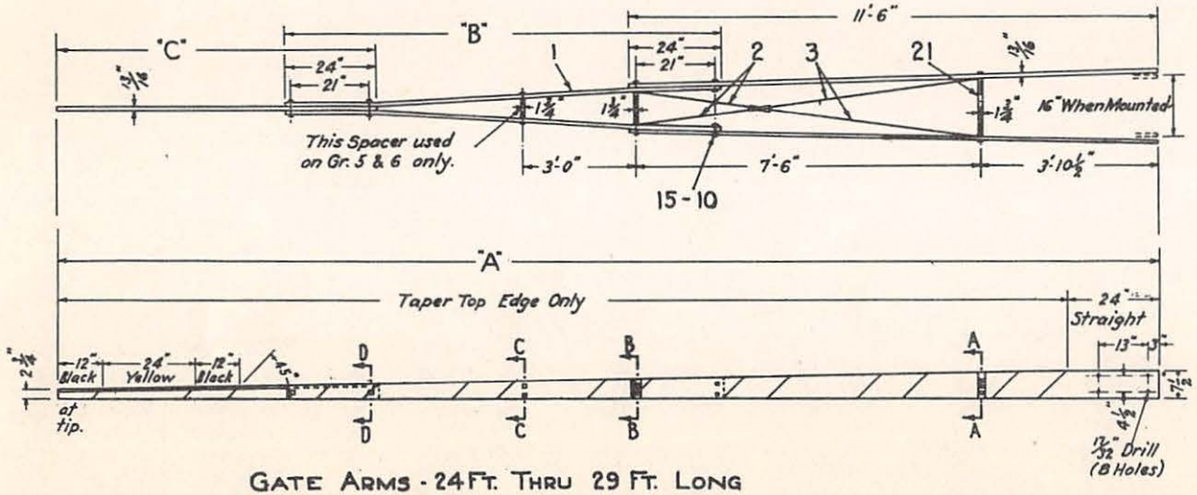


SECTION AA

BILL OF MATERIAL & REFERENCE TABLE								
NAME	REF.	DRAW No.	GR. 1	GR. 2	GR. 3	GR. 4	GR. 5	GR. 6
1" SUGAR PINE GRADE "C" SELECT.	1	BD. FT.	AS REQ.	AS REQ.	AS REQ.	AS REQ.	AS REQ.	AS REQ.
TIE ROD COMP. 5/16" x 41½"	2	31308-GR.1	2	2	2	2	2	2
TIE ROD COMP. 5/16" x 48"	3	31308-GR.2	2	2	2	2	2	2
ROD 3/8"-16 x 18"	4	17689-33	2	2	2	2	2	2
NUT 3/8"-16	5	0689-1	8	8	8	8	12	12
PLATE 1/8" x 1½" x 6"	6	35845-152	4	4	4	4	4	4
ROD 3/8"-16 x 13½"	7	17689-31	2	2	2	2	2	2
PLATE 1/8" x 1½" x 6"	8	35845-151	4	4	4	4	4	4
ROD 3/8"-16 x 9"	9	17689-35					2	2
WASHER 3/16 I.D. 1" O.D. x 5/64" THICK	10	626-44	12	12	12	12	16	16
BOLT 3/8"-16 x 3" SQ. HD. & NUT	11	0238	2	2	2	2	2	2
WASHER ¼" "SK" PROOF	12	53029-2	1	1	1	1	1	1
NUT 5/16"-18 x 5/16 THICK	13	42159	4	4	4	4	4	4
WASHER 5/16 LOCK	14	0623-1	4	4	4	4	4	4
BOLT 5/16"-16 x 2¼ SQ. HD. & NUT	15	10246-1	4	4	4	4	4	4
BRACKET	16	47754-186	4	4	4	4	4	4
BOLT 5/16"-18 x 1¾" SQ. HD. & NUT	17	48058-1	4	4	4	4	4	4
COTTER PIN ⅛" x 1½"	18	0169	4	4	4	4	4	4
BRACKET	19	47754-187	2	2	2	2	2	2
BOLT ¼" x 1" SQ. HD. & HEX. NUT	20	50621-2	1	1	1	1	1	1
2" SUGAR PINE GRADE "C" SELECT.	21	BD. FT.	AS REQ.	AS REQ.	AS REQ.	AS REQ.	AS REQ.	AS REQ.
NOMINAL LENGTH (FROM ℄ OF POLE)			25'-0"	26'-0"	27'-0"	28'-0"	29'-0"	30'-0"
DIMENSIONS "A"			24'-0"	25'-0"	26'-0"	27'-0"	28'-0"	29'-0"
DIMENSIONS "B"			9'-6"	9'-6"	9'-6"	9'-6"	11'-6"	11'-6"
DIMENSIONS "C"			7'-0"	8'-0"	9'-0"	10'-0"	9'-0"	10'-0"

DRAWING NUMBERS REFER TO FILE 321.5

J5
B



GATE ARMS - 24 FT. THRU 29 FT. LONG

Note:-
The signing of this plan by the officers of the Boston and Maine Railroad denotes, that the appliance shown hereon, while of satisfactory quality, is acceptable for purchase and use by the railroad, but no other responsibility is implied or assumed.

GENERAL NOTES:-
PAINTING:- PAINT ARM AS SHOWN - BOTH SIDES AND EDGES.
GATE ARM WOOD WORK-WHITE, B.&M.R.R. STD. A-5-27, 2 COATS.
OUTSIDE FACES OF GATE ARM-BLACK DIAGONAL STRIPES OVER WHITE PAINT, 1 COAT S-W BULLETIN PAINT #45050 OR EQUAL.
YELLOW DIAGONAL STRIPES, OVER WHITE PAINT, 1 COAT S-W BULLETIN PAINT #45049 OR EQUAL.
IRON WORK - BLACK - B.&M.R.R. A-10-27.

BOSTON AND MAINE R. R.

STANDARD
GATE ARMS-24 FT. THRU 29 FT.

FOR AUTOMATIC HIGHWAY CROSSING GATES

APPROVED

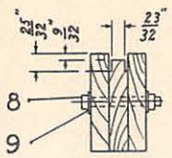
E. H. Fox
ENGINEER SIGNALS & TELEGRAPH

H. F. Fifield
ENGINEER M. OF W.

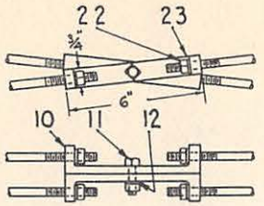
P. Hughes
CHIEF ENGINEER

PLAN	
DRAWN BY: F. B. W.	
CHECKED BY: G.W.H.	
CORRECT: F W H	
ISSUE	DATE
A	1-15-48

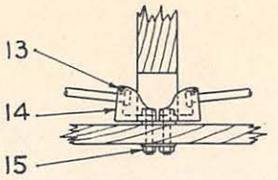
J5 C



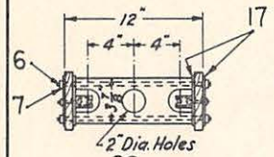
DD



ENLARGED VIEW OF TURNBUCKLE



ENLARGED VIEW OF TIE CLIPS



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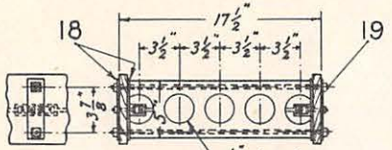
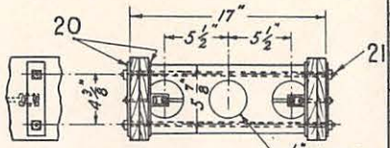


BB

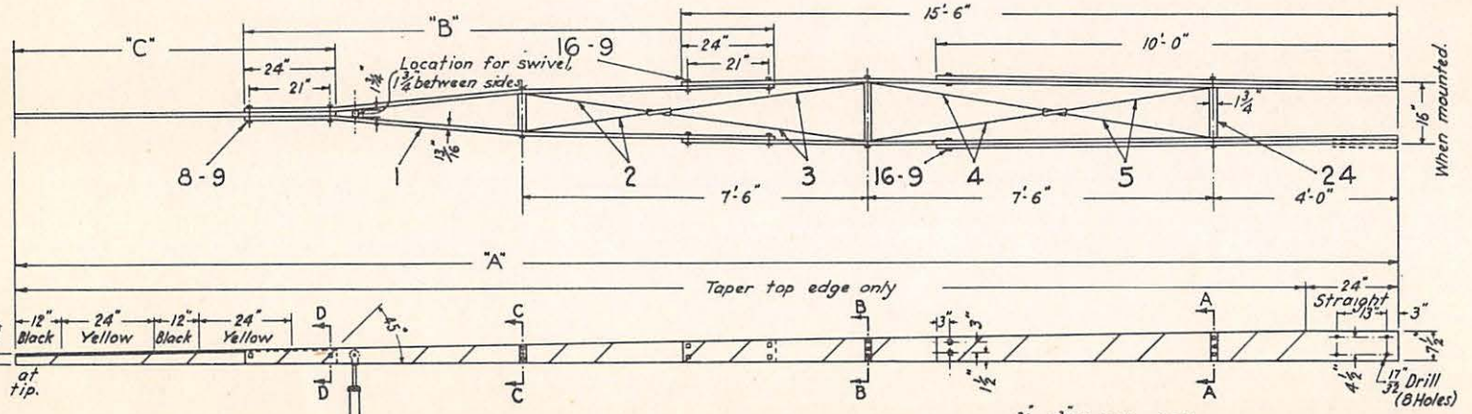


SECTION AA

BILL OF MATERIAL & REFERENCE TABLE

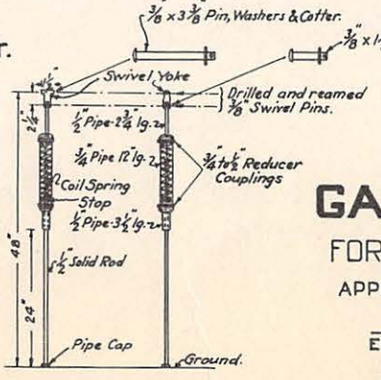
NAME	REF.	DRAW No.	GR.1	GR.2	GR.3	GR.4	GR.5	GR.6	GR.7	GR.8
1" SUGAR PINE GRADE "C" SELECT.	1	BD. FT.	AS REQ.	AS REQ.	AS REQ.	AS REQ.	AS REQ.	AS REQ.	AS REQ.	AS REQ.
TIE ROD COMP. 5/16" x 41 1/2"	2	31308 GR.1	2	2	2	2	2	2	2	2
TIE ROD COMP. 5/16" x 48"	3	31308 GR.2	2	2	2	2	2	2	2	2
TIE ROD COMP. 5/16" x 41 1/2"	4	31308 GR.3	2	2	2	2	2	2	2	2
TIE ROD COMP. 5/16" x 48"	5	31308 GR.4	2	2	2	2	2	2	2	2
ROD, 3/8"-16 x 13 1/2"	6	17689-31	2	2	2	2	2	2	2	2
NUT, 3/8"-16 x 5/16" THICK. SQ.	7	0689-1	12	12	12	12	12	12	12	12
BOLT, 3/8" x 3" SQ. HD. & NUT.	8	0238	2	2	2	2	2	2	2	2
WASHER, 1/16" x 1" x 5/64 THICK.	9	626-44	28	28	28	28	28	28	28	28
BRACKET.	10	47754-187	4	4	4	4	4	4	4	4
BOLT, 1/4" x 1" SQ. HD. HEX NUT.	11	50621-2	2	2	2	2	2	2	2	2
WASHER, 1/4" "SK" PROOF.	12	53029-2	2	2	2	2	2	2	2	2
COTTER PIN, 1/8" x 1 1/2"	13	0169	8	8	8	8	8	8	8	8
BRACKET.	14	47754-186	8	8	8	8	8	8	8	8
BOLT, 5/16" x 1 3/4" SQ. HD. & NUT.	15	48058-1	8	8	8	8	8	8	8	8
BOLT, 3/8" x 2 1/4" SQ. HD. & NUT.	16	10246-1	12	12	12	12	12	12	12	12
PLATE 1/8" x 1 1/2" x 4 1/2"	17	35845-150	4	4	4	4	4	4	4	4
PLATE 1/8" x 1 1/2" x 5 3/8"	18	35845-151	4	4	4	4	4	4	4	4
ROD, 3/8"-16 x 19"	19	17689-32	2	2	2	2	2	2	2	2
PLATE 1/8" x 1 1/2" x 6 1/2"	20	35845-152	4	4	4	4	4	4	4	4
ROD, 3/8"-16 x 18"	21	17689-33	2	2	2	2	2	2	2	2
NUT, 5/16"-18 x 5/16" THICK, HEX.	22	42159	8	8	8	8	8	8	8	8
WASHER, 5/16" LOCK.	23	0623-1	8	8	8	8	8	8	8	8
2" SUGAR PINE GRADE "C" SELECT.	24	BD. FT.	AS REQ.	AS REQ.	AS REQ.	AS REQ.	AS REQ.	AS REQ.	AS REQ.	AS REQ.
NOMINAL LENGTH (FROM ℄ OF POLE)			31'-0"	32'-0"	33'-0"	34'-0"	35'-0"	36'-0"	37'-0"	38'-0"
DIMENSIONS "A"			30'-0"	31'-0"	32'-0"	33'-0"	34'-0"	35'-0"	36'-0"	37'-0"
DIMENSIONS "B"			11'-6"	11'-6"	11'-6"	11'-6"	15'-6"	15'-6"	15'-6"	15'-6"
DIMENSIONS "C"			7'-0"	8'-0"	9'-0"	10'-0"	7'-0"	8'-0"	9'-0"	10'-0"

DRAWING NUMBERS REFER TO FILE 321.5



Swinging Leg (See Detail)

GATE ARMS - 30 FT. THRU 37 FT.



SWINGING LEG

GENERAL NOTES:-

PAINTING:- PAINT ARM AS SHOWN - BOTH SIDES AND EDGES.
GATE ARM WOOD WORK - WHITE, B.& M.R.R. STD. A-5-27, 2 COATS.
OUTSIDE FACES OF GATE ARM - BLACK DIAGONAL STRIPES OVER WHITE PAINT, 1 COAT S-W BULLETIN PAINT #45050 OR EQUAL.
YELLOW DIAGONAL STRIPES, OVER WHITE PAINT, 1 COAT S-W BULLETIN PAINT #45049 OR EQUAL.
IRON WORK - BLACK - B.& M.R.R. A-10-27.
SWINGING LEG NOT INCLUDED IN BILL OF MATERIAL.

Note:-
The signing of this plan by the officers of the Boston and Maine Railroad denotes, that the appliance shown hereon, while of satisfactory quality, is acceptable for purchase and use by the railroad, but no other responsibility is implied or assumed.

BOSTON AND MAINE R. R.

STANDARD

GATE ARMS-30 FT. THRU 37 FT.

FOR AUTOMATIC HIGHWAY CROSSING GATES

APPROVED

E. M. Fox
ENGINEER SIGNALS & TELEGRAPH

A. F. Field
ENGINEER M. OF W.

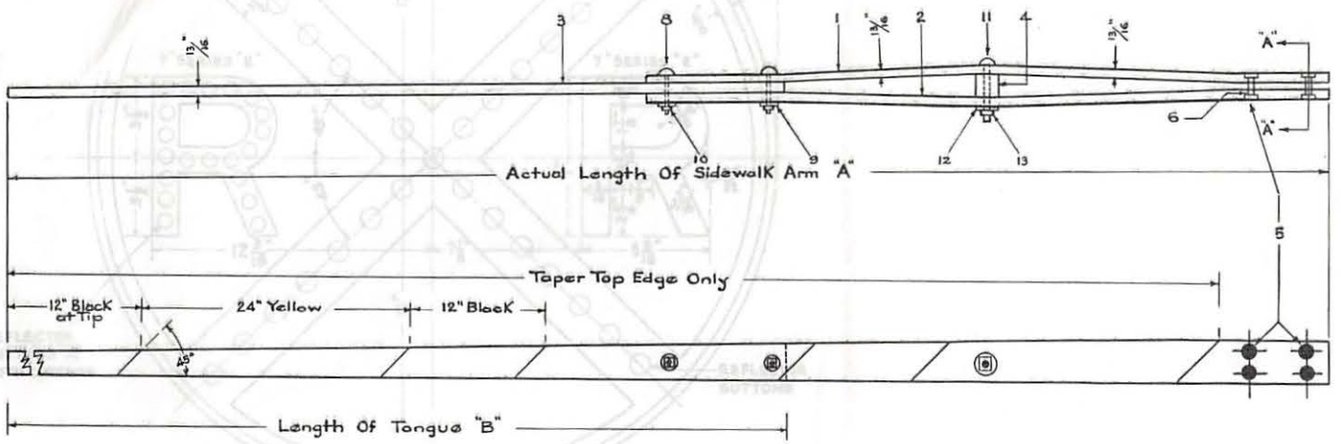
G. Lyman
CHIEF ENGINEER

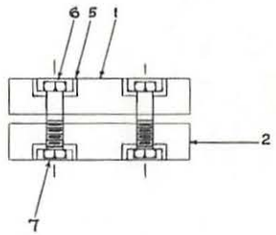
PLAN	
Drawn By C.H.B.	
Checked " F.F.F.	
Correct " C.F.F.	
Issue	Date
A	3-6-52

J5
D

SIDEWALK ARMS UP TO AND INCLUDING 14'-00" LONG															
ACTUAL LGTH. OF ARM "A"	7'-0"	7'-6"	8'-0"	8'-6"	9'-0"	9'-6"	10'-0"	10'-6"	11'-0"	11'-6"	12'-0"	12'-6"	13'-0"	13'-6"	14'-0"
ITEM "1 - 3565-141A	5'-0"	5'-0"	5'-0"	5'-0"	5'-0"	5'-0"	5'-0"	5'-0"	5'-0"	5'-0"					
" "2 - " -141	5'-0"	5'-0"	5'-0"	5'-0"	5'-0"	5'-0"	5'-0"	5'-0"	5'-0"						
" "1 - " -155A										8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"
" "2 - " -155										8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"
LGTH. OF TONGUE "B"	3'-0"	3'-6"	4'-0"	4'-6"	5'-0"	5'-6"	6'-0"	6'-6"	7'-0"	4'-6"	5'-0"	5'-6"	6'-0"	6'-6"	7'-0"

DRAWING NUMBERS REFER TO W.R.R.S. Co. DRAWINGS





SECTION "A—A"

BILL OF MATERIAL & REFERENCE TABLE				
NAME	REF.	DWG. NO	NO. REQ.	REMARKS
BASE BOARD	1	SEE TABLE	1	1" SUGAR PINE
" "	2	" "	1	GRADE "C" SELECTED
TONGUE	3	3565-142	1	
SPACER BLOCK 2¼"	4	" -150A	1	
CUP WASHER	5	" -71	8	
CAP SCREW-HEX. HD. ⅝"-24(S.A.E) x 6¾"	6		4	CADMIUM PLATED STEEL
HEX. NUT " " "	7		4	" " "
CARRIAGE BOLT ½"-13 x 3½"	8		2	GALVANIZED
PLAIN WASHER ½"	9		2	" "
SQUARE NUT ½"-13	10		2	" "
CARRIAGE BOLT ⅝"-18 x 5"	11		1	" "
PLAIN WASHER ⅝"	12		1	
SQUARE NUT ⅝"-16	13		1	

DRAWING NUMBERS REFER TO W.R.R.S. CO. DRAWINGS

Note:-
The signing of this plan by the officers of the Boston and Maine Railroad denotes that the appliance shown hereon, while of satisfactory quality, is acceptable for purchase and use by the railroad, but no other responsibility is implied or assumed.

GENERAL NOTES:-

PAINTING:- PAINT ARM AS SHOWN - BOTH SIDES AND EDGES GATE ARM WOOD WORK - WHITE, B & M.R.R. STD. A-5-27, 2 COATS OUTSIDE FACES OF GATE ARM - BLACK DIAGONAL STRIPES OVER WHITE PAINT, 1 COAT S-W BULLETIN PAINT #45050 OR EQUAL.

YELLOW DIAGONAL STRIPES, OVER WHITE PAINT, 1 COAT S-W BULLETIN PAINT #45049 OR EQUAL.

BOSTON AND MAINE R. R.

STANDARD

SIDEWALK ARMS — 7FT. THRU 14FT.

FOR AUTOMATIC HIGHWAY CROSSING GATES

APPROVED

E. M. Fox
ENGINEER OF SIGNALS & TELEGRAPH

F. F. Fifield
ENGINEER M. OF W.

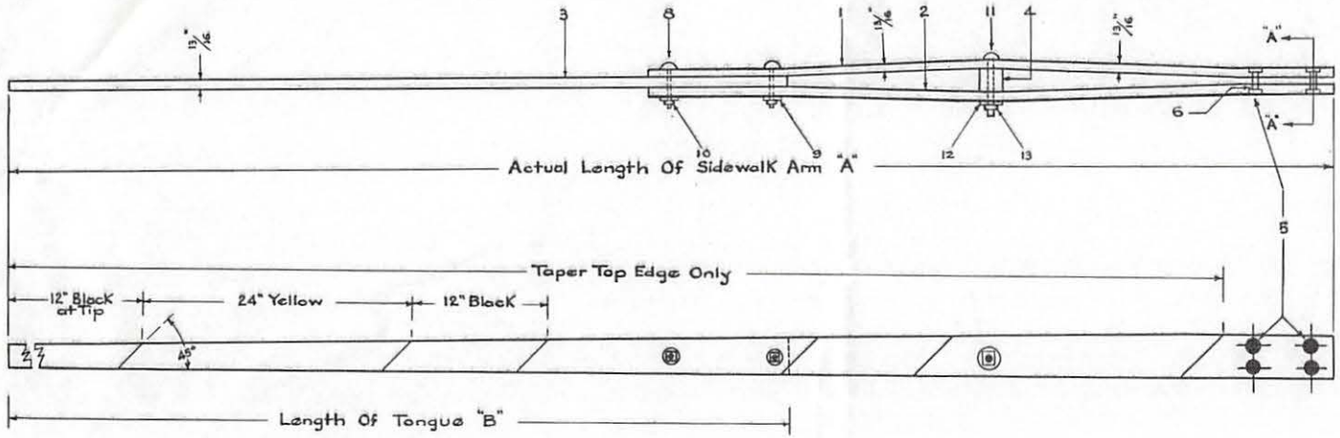
S. T. Phillips
CHIEF ENGINEER

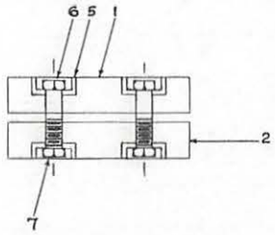
PLAN	
Drawn By C.H.B.	
Checked " F.F.C.	
Correct " C.F.F.	
Issue	Date
A	3-6-52

J5 D

SIDEWALK ARMS UP TO AND INCLUDING 14'-00" LONG															
ACTUAL LGTH. OF ARM "A"	7'-0"	7'-6"	8'-0"	8'-6"	9'-0"	9'-6"	10'-0"	10'-6"	11'-0"	11'-6"	12'-0"	12'-6"	13'-0"	13'-6"	14'-0"
ITEM #1 - 3565-141A	5'-0"	5'-0"	5'-0"	5'-0"	5'-0"	5'-0"	5'-0"	5'-0"	5'-0"						
" #2 - " - 141	5'-0"	5'-0"	5'-0"	5'-0"	5'-0"	5'-0"	5'-0"	5'-0"	5'-0"						
" #1 - " - 155A										8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"
" #2 - " - 155										8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"
LGTH. OF TONGUE "B"	3'-0"	3'-6"	4'-0"	4'-6"	5'-0"	5'-6"	6'-0"	6'-6"	7'-0"	4'-6"	5'-0"	5'-6"	6'-0"	6'-6"	7'-0"

DRAWING NUMBERS REFER TO W.R.R.S. Co. DRAWINGS





SECTION "A-A"

BILL OF MATERIAL & REFERENCE TABLE					
NAME		REF.	DWG. NO	NO. REQ.	REMARKS
BASE BOARD		1	SEE TABLE	1	1" SUGAR PINE
" "		2	" "	1	GRADE "C" SELECTED
TONGUE		3	3565-142	1	
SPACER BLOCK	2 1/4"	4	" -150A	1	
CUP WASHER		5	" -71	8	
CAP SCREW - HEX. HD.	5/16"-24 (S.A.E) x 6 3/4"	6		4	CADMIUM PLATED STEEL
HEX. NUT	" " "	7		4	" " "
CARRIAGE BOLT	1/2"-16 x 3 1/2"	8		2	GALVANIZED "
PLAIN WASHER	1/2"	9		2	" "
SQUARE NUT	1/2"-16	10		2	" "
CARRIAGE BOLT	5/8"-16 x 5"	11		1	" "
PLAIN WASHER	5/8"	12		1	
SQUARE NUT	5/8"-16	13		1	

DRAWING NUMBERS REFER TO W.R.R.S. CO. DRAWINGS

Note:-
The signing of this plan by the officers of the Boston and Maine Railroad denotes that the appliance shown hereon, while of satisfactory quality, is acceptable for purchase and use by the railroad, but no other responsibility is implied or assumed.

GENERAL NOTES:-

PAINTING:- PAINT ARM AS SHOWN - BOTH SIDES AND EDGES GATE ARM WOOD WORK - WHITE, B & M.R.R. STD. A-5-27, 2 COATS OUTSIDE FACES OF GATE ARM - BLACK DIAGONAL STRIPES OVER WHITE PAINT, 1 COAT S-W BULLETIN PAINT #45050 OR EQUAL.

YELLOW DIAGONAL STRIPES, OVER WHITE PAINT, 1 COAT S-W BULLETIN PAINT #45049 OR EQUAL.

BOSTON AND MAINE R. R.

STANDARD

SIDEWALK ARMS - 7FT. THRU 14FT.

FOR AUTOMATIC HIGHWAY CROSSING GATES

APPROVED

E. M. Fox
ENGINEER OF SIGNALS & TELEGRAPH

F. F. Fifield
ENGINEER M. OF W.

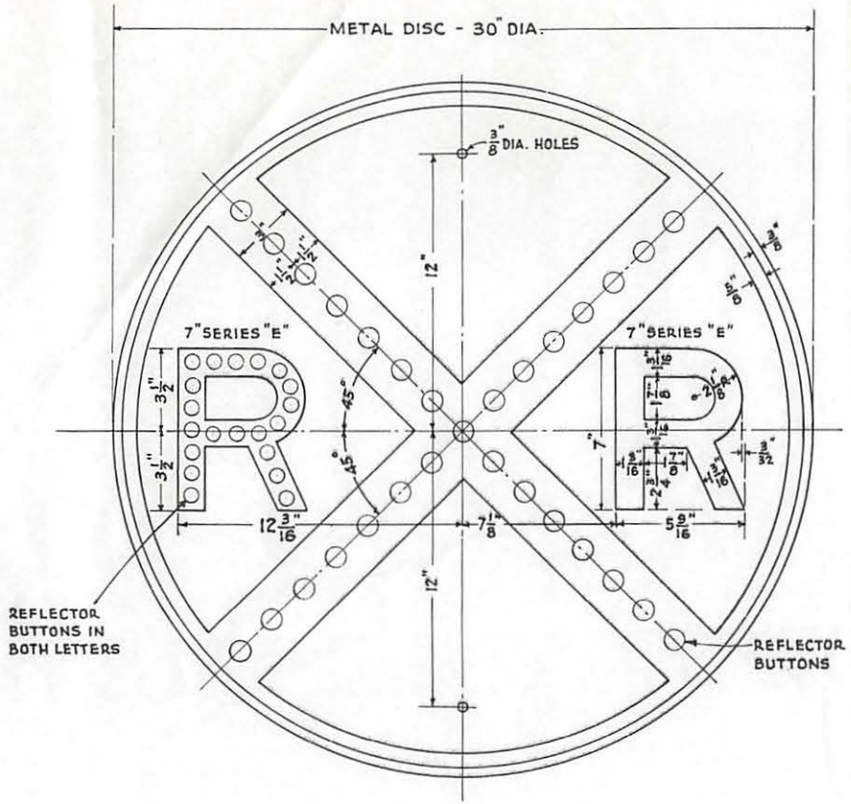
S. T. Gibbs
CHIEF ENGINEER

PLAN	
DRAWN	HAR.
CHECKED	G.H.B.
CORRECT	F.W.H.

ISSUE	DATE
F	11-17-51

F = GENERAL REVISION

K I



METAL CROSSING DISC.

NOTES:
BACKGROUND = HIGHWAY YELLOW.
BORDER, SYMBOL, AND LETTERING = BLACK.
REFLECTORIZED BY REFLECTOR BUTTONS IN SYMBOL AND LETTERS, OR BY "REFLECTING COATING" BACKGROUND.
PLAN BASED ON PUBLIC ROADS ADMINISTRATION 1948 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, SIGN W32.

BOSTON AND MAINE R. R.

STANDARD

CROSSING DISC

ADVANCE WARNING SIGN

MAINE, VERMONT, NEW HAMPSHIRE, NEW YORK
MASSACHUSETTS

APPROVED:

H-7 Fiesd
ENGINEER M. OF W.

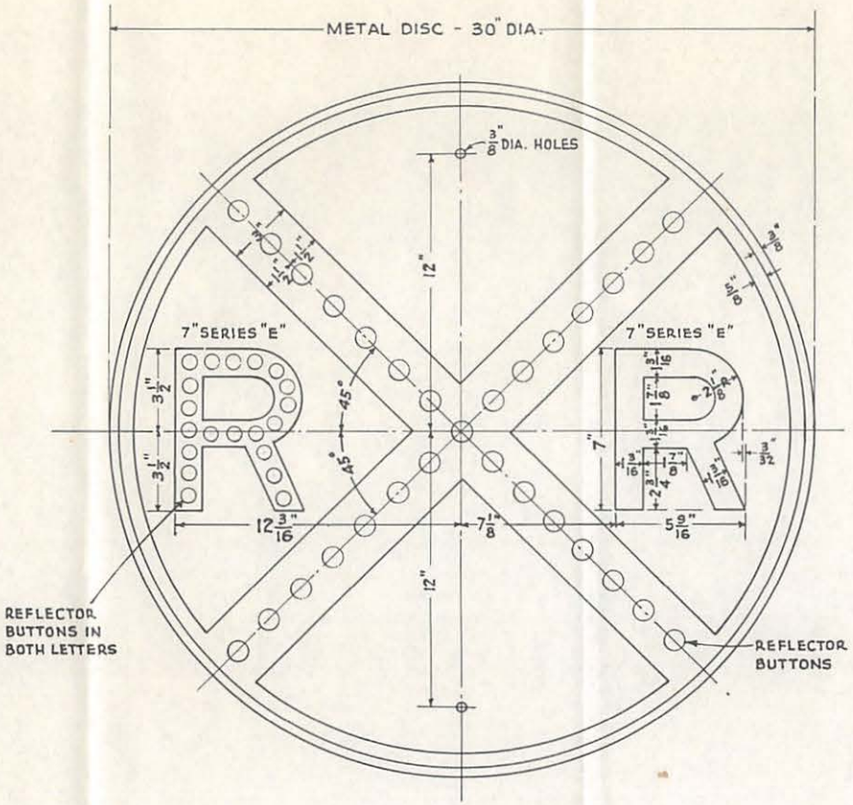
CHIEF ENGINEER

PLAN	
DRAWN	HAR.
CHECKED	G.H.B.
CORRECT	F.W.H.

ISSUE	DATE
F	11-17-'51
G	11-8-'54

F = GENERAL REVISION
G = REGULATIONS ADDED.

K I



METAL CROSSING DISC.

NOTES:
BACKGROUND = HIGHWAY YELLOW.
BORDER, SYMBOL, AND LETTERING = BLACK.
REFLECTORIZED BY REFLECTOR BUTTONS IN SYMBOL AND LETTERS, OR BY "REFLECTING COATING" BACKGROUND.
PLAN BASED ON PUBLIC ROADS ADMINISTRATION 1948 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, SIGN W32.

NEW HAMPSHIRE

RAILROAD RESPONSIBILITY FOR PLACEMENT LIMITED TO INITIAL INSTALLATION. CITY OR TOWN-RESPONSIBLE FOR ERECTION TO REPLACE WORN OR MISSING ADVANCE WARNING SIGNS HERETOFORE MAINTAINED.

LOCATION-ON EACH APPROACH TO GRADE CROSSINGS NOT LESS THAN 300 NOR MORE THAN 500 FEET THEREFROM UNLESS THE COMMISSION ON PETITION OF A CITY OR TOWN SHALL IN ANY PARTICULAR CASE APPROVE OF A DIFFERENT DISTANCE. THEY SHALL BE PLACED AS NEARLY AS POSSIBLE AT A FULL NUMBER OF HUNDREDS OF FEET FROM THE CROSSING, WHICH NUMBER SHALL BE STATED ON THE SIGNS.

WHENEVER PRACTICABLE, SIGNS SHALL BE ERECTED SO THAT THE CENTER OF THE SIGN IS NOT LESS THAN 5 NOR MORE THAN 7 FEET FROM EDGE OF SURFACING ON IMPROVED ROADS, EXCEPT THAT WHERE A RAISED CURB EXISTS THEY MAY BE SET AS CLOSE AS 3 FEET TO THE EDGE OF THE CURB.

HEIGHT OF SIGN-UNDER ORDINARY CONDITIONS THE CENTER OF THE SIGN SHALL BE PLACED 3½ FEET ABOVE THE CROWN OF THE PAVEMENT, OR TRAVELED WAY. HEIGHT SHALL BE VARIED TO SUIT CONDITIONS ON ASCENDING OR DESCENDING GRADES SO THAT SIGN SHALL BE PROPERLY ILLUMINATED ON CITY AND VILLAGE STREETS WHERE STREET LIGHTS FURNISH ADEQUATE ILLUMINATION. SIGNS SHALL BE PLACED WITH LOWER EDGE NOT LESS THAN 7 FEET ABOVE THE GUTTER GRADE IN ORDER TO CLEAR PARKED CARS.

NEW YORK

TO BE FURNISHED BY RAILROAD AND INSTALLED BY MUNICIPALITY, POLITICAL SUBDIVISION OR STATE COMMISSION OF HIGHWAYS MAINTAINING THE HIGHWAY.

TOP OF SIGN SHALL BE NOT MORE THAN 5' AND NOT LESS THAN 4 FEET ABOVE GRADE OF HIGHWAY, THE EXACT HEIGHT TO BE FIXED SO THAT THE CIRCULAR METAL DISC SHALL BE MOST READILY ILLUMINATED BY THE HEADLIGHTS OF PASSING AUTOMOBILES, THE EXACT LOCATION OF SUCH SIGN SHALL BE DETERMINED BY THE COMMISSION HAVING JURISDICTION.

EVERY MUNICIPALITY OR POLITICAL SUBDIVISION OR IN CASE OF STATEWAYS, THE DEPARTMENT OF PUBLIC WORKS, WHICH IS CHARGED WITH THE DUTY OF MAINTAINING A HIGHWAY AT PLACES WHERE SUCH HIGHWAY CROSSES A RAILROAD AT GRADE, SHALL INSTALL AND MAINTAIN AN APPROACH WARNING SIGN IN EACH SUCH HIGHWAY ON EACH SIDE OF EACH RAILROAD GRADE CROSSING AT A DISTANCE THEREFROM OF NOT LESS THAN THREE HUNDRED FEET.

MASSACHUSETTS

DISCS TO BE FURNISHED PRIMARILY BY THE RAILROAD TO ANY COUNTY, CITY OR TOWN IN THE COMMONWEALTH OR TO THE DEPT. OF PUBLIC WORKS. EVERY COUNTY, CITY AND TOWN SHALL, UNLESS IN ANY CASE IT DEEMS IT UNNECESSARY OR IMPRACTICABLE SO TO DO, PLACE AND MAINTAIN WARNING SIGNS ON EVERY PUBLIC WAY SUBJECT TO ITS JURISDICTION, WHERE THE WAY CROSSES THE TRACKS OF A RAILROAD AT GRADE. THE SAID SIGNS SHALL BE PLACED IN A CONSPICUOUS SITUATION BESIDE THE PUBLIC WAY, ON EACH SIDE OF THE CROSSING, AND AT A DISTANCE OF NOT LESS THAN THREE HUNDRED FEET FROM THE NEAREST RAIL OF THE CROSSING.

MAINE

TO BE FURNISHED AND PLACED BY STATE.
TO BE PLACED IN CONSPICUOUS LOCATIONS BESIDE HIGHWAY.
DISTANCE NOT LESS THAN 300 FEET FROM NEAREST RAIL OF CROSSING.

VERMONT

NO LAW OR STATUTE

BOSTON AND MAINE R. R.

STANDARD
CROSSING DISC

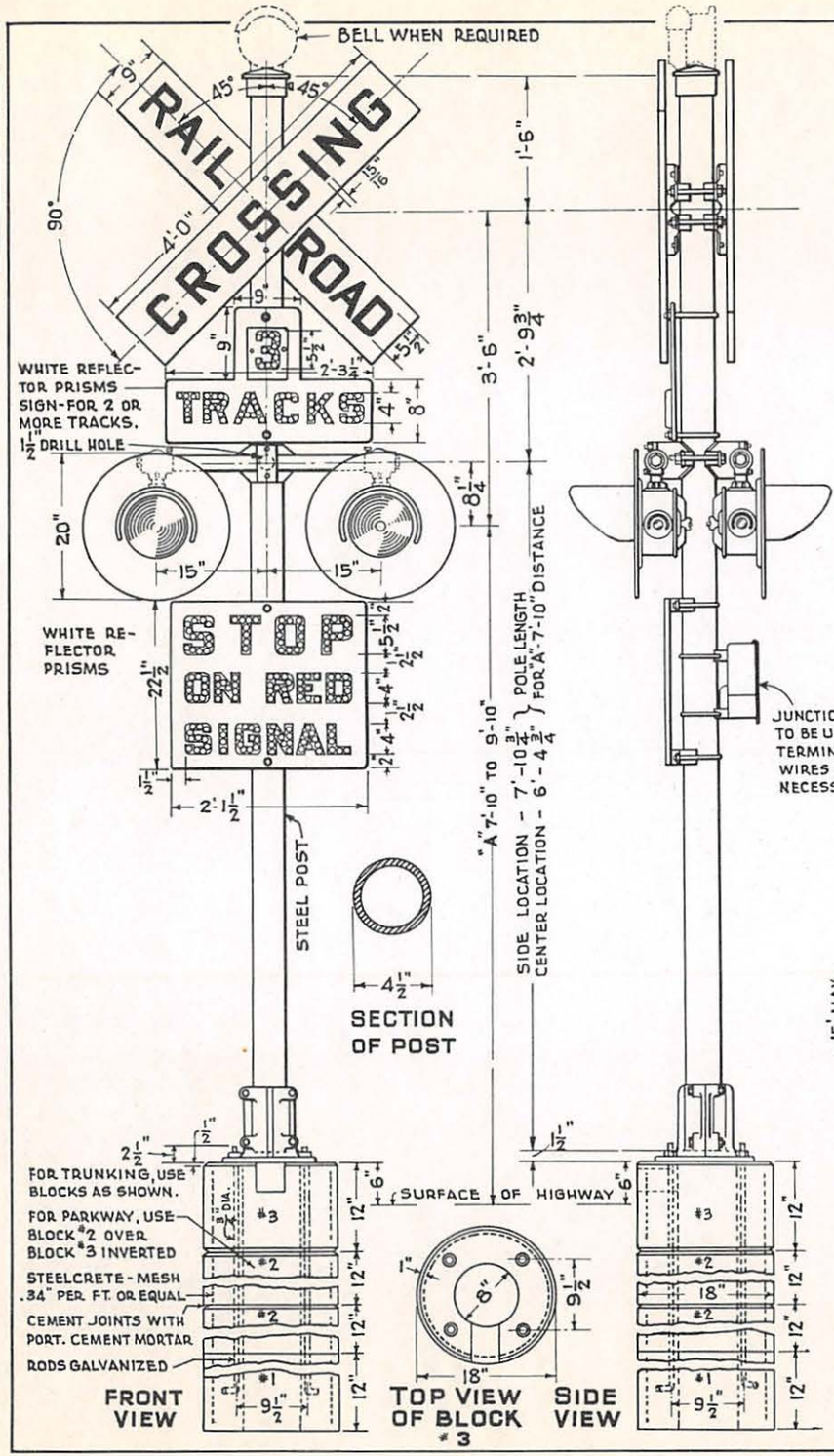
ADVANCE WARNING SIGN
MAINE, VERMONT, NEW HAMPSHIRE, NEW YORK
MASSACHUSETTS

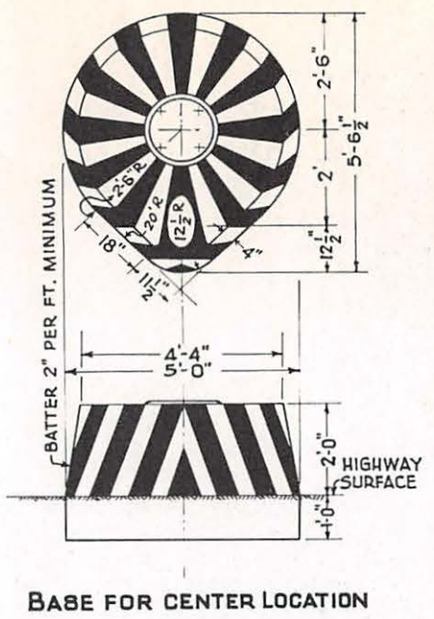
APPROVED:

ENGINEER M. OF W. — CHIEF ENGINEER

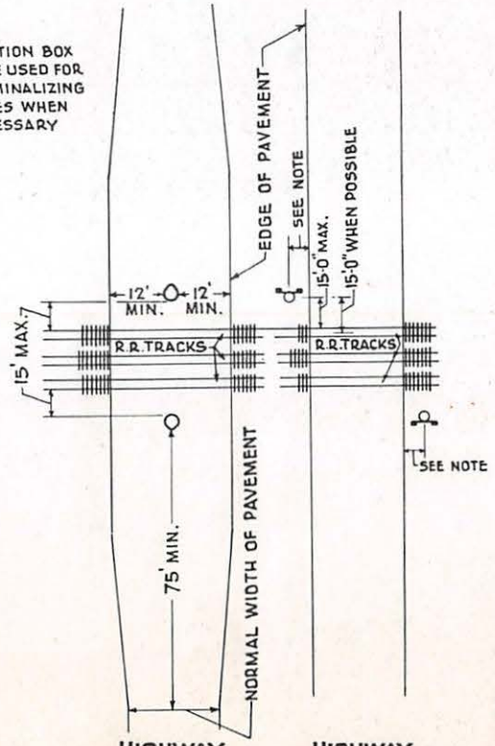
PLAN	
DRAWN BY HAR	
CHECKED	
CORRECT J.J.R.	
ISSUE	DATE
A	3-1-36
B	3-27-36

K-7





BASE FOR CENTER LOCATION



HIGHWAY CENTER LOCATION — HIGHWAY SIDE LOCATION

DIRECTIONS.

1. SIGNALS TO BE LOCATED ON RIGHT SIDE OF HIGHWAY APPROACHING RAILROAD, ONE ON EACH SIDE OF RAILROAD, NOT MORE THAN FIFTEEN (15) FEET FROM OUTSIDE RAIL OF NEAREST TRACK AND NOT MORE THAN TEN (10) FEET NOR LESS THAN SIX (6) FEET FROM NEAREST EDGE OF HIGHWAY PAVEMENT, UNLESS PREVENTED BY LOCAL CONDITIONS.
2. SIGNALS MAY BE LOCATED IN CENTER OF OR ON LEFT SIDE OF HIGHWAY WITH SPECIAL PERMISSION OF THE PROPER PUBLIC AUTHORITY.
3. FLASHING LIGHTS SHALL SHINE IN BOTH DIRECTIONS ALONG THE HIGHWAY.
4. REFLECTOR SIGN SHALL DISPLAY THE WORDS "STOP ON RED SIGNAL" IN WHITE LETTERS WITH WHITE REFLECTOR LENSES ON BLACK BACKGROUND TOWARD HIGHWAY TRAFFIC APPROACH THE NEAR SIDE OF THE CROSSING.
5. CROSSBUCK SHALL BE WHITE WITH BLACK LETTERS. IF REFLECTOR LENSES ARE USED, THE CROSSBUCK SHALL DISPLAY THE WORDS "RAILROAD CROSSING" IN WHITE LETTERS WITH WHITE REFLECTOR LENSES ON BLACK BACKGROUND TOWARD HIGHWAY TRAFFIC APPROACHING THE NEAR SIDE OF THE CROSSING.
6. WHITE SIGN WITH BLACK LETTERS INDICATING NUMBER OF TRACKS TO BE USED WHERE THERE ARE TWO OR MORE TRACKS. IF REFLECTOR LENSES ARE USED, LETTERS SHALL BE WHITE ON BLACK BACKGROUND.
7. LAMP CASES, HOODS AND BACKGROUNDS SHALL BE PAINTED BLACK. MAST AND PARTS NOT OTHERWISE SPECIFIED SHALL BE PAINTED WHITE OR ALUMINUM.
8. FOUNDATIONS SHALL BE OF CONCRETE IN THE PROPORTIONS 1 : 2½ : 3. THE SIDE LOCATION FOUNDATIONS ARE TO BE PRECAST AND THE CENTER LOCATION FOUNDATIONS TO BE INTEGRAL. THE CENTER CONCRETE BLOCK SHALL BE PAINTED BLACK AND WHITE STRIPES.
9. THE CENTER LINE OF LAMPS SHALL PREFERABLY BE NOT LESS THAN 7'-10" NOR MORE THAN 9'-10" ABOVE THE SURFACE OF THE HIGHWAY (SHOWN AS "A") EXCEPT THAT IN NEW YORK STATE IT SHALL BE NOT LESS THAN 6'-0 NOR MORE THAN 9'-0" AND WHEREVER POSSIBLE IN NEW YORK STATE SHALL BE 6'-0". IN OTHER STATES THE MINIMUM HEIGHT FROM THE CENTER LINE OF LAMP TO THE SURFACE OF THE HIGHWAY ("A") MAY BE REDUCED BELOW THE 7'-10" WHERE LOCAL CONDITIONS REQUIRE WITH THE PERMISSION OF THE PROPER PUBLIC AUTHORITIES.
10. DETAILS NOT SHOWN SHALL CONFORM TO A.A.R. RECOMMENDED PRACTICE.

BOSTON AND MAINE R.R.

STANDARD

AUTOMATIC HIGHWAY CROSSING SIGNAL

APPROVED

SIGNAL ENGINEER

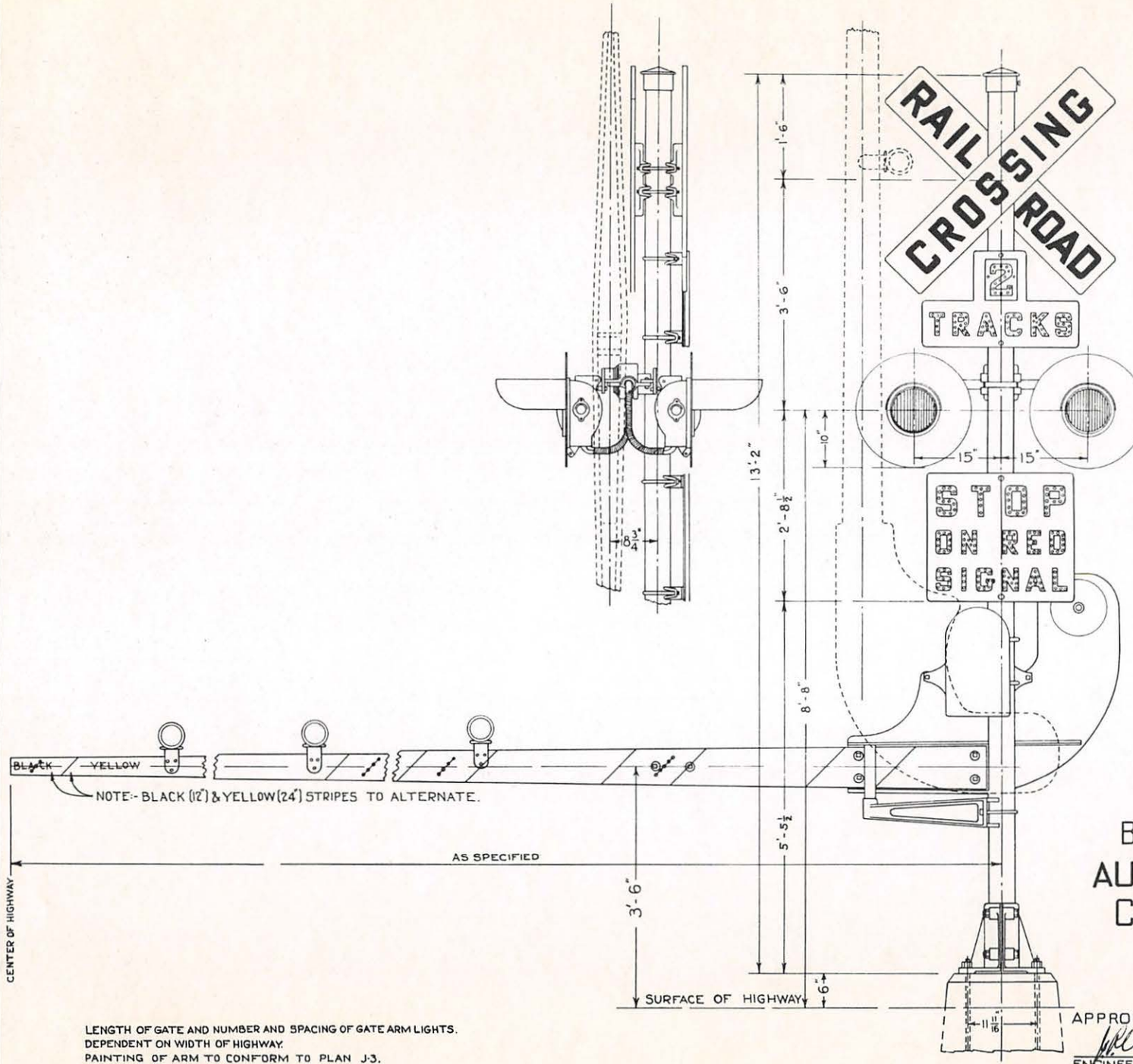
ENGINEER M. OF W.

ACTING CHIEF ENGINEER

PLAN	
DRAWN: FWH	
CHECKED: [illegible]	
CORRECTED: [illegible]	
ISSUE	DATE
A	7-1-38
B	12-5-45

B-Painting Changed to Agree with Std. Hwy. Crossing Gate, J2.

K9



LENGTH OF GATE AND NUMBER AND SPACING OF GATE ARM LIGHTS. DEPENDENT ON WIDTH OF HIGHWAY.
PAINTING OF ARM TO CONFORM TO PLAN J-3.
SIGNAL AND SIGNS TO CONFORM WITH PLAN K-7.

BOSTON AND MAINE R.R.

AUTOMATIC HIGHWAY CROSSING SIGNAL WITH GATE

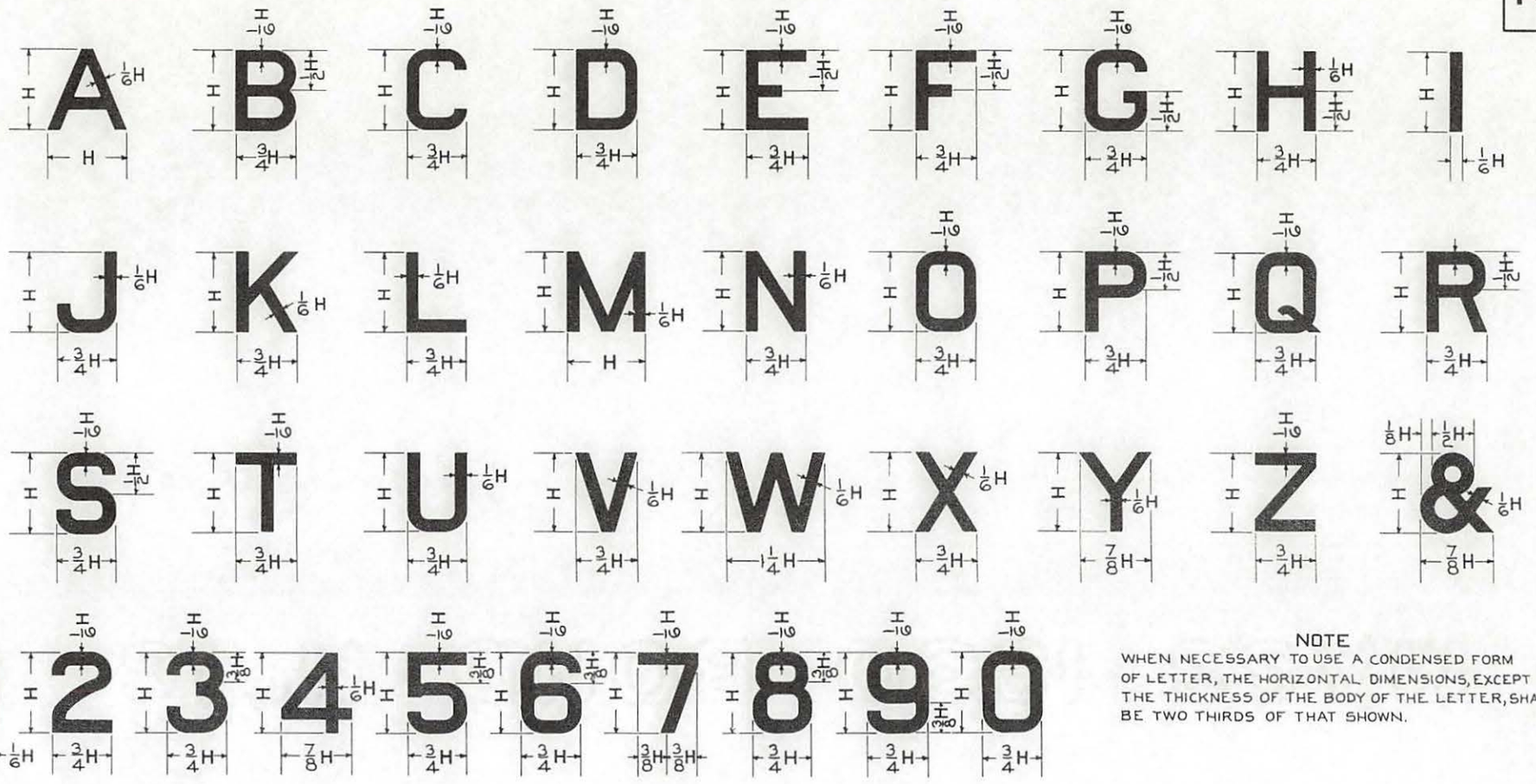
APPROVED

[signature]
ENGINEER OF SIGNALS AND TELEGRAPH

[signature]
CHIEF ENGINEER

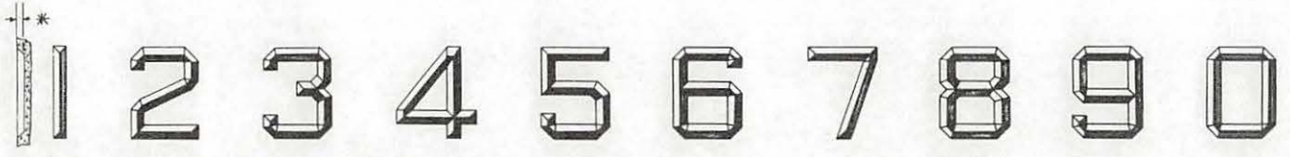
PLAN	
DRAWN BY: A.S.M.	
CHECKED: E.F.B.	
CORRECT: J.J.R.	
ISSUE	DATE
A	6-10-30

K10



NOTE

WHEN NECESSARY TO USE A CONDENSED FORM OF LETTER, THE HORIZONTAL DIMENSIONS, EXCEPT THE THICKNESS OF THE BODY OF THE LETTER, SHALL BE TWO THIRDS OF THAT SHOWN.



* NOTE:- DEPTH OF PATTERNS FOR 1½" LETTERS - ¼"
DEPTH OF PATTERNS FOR 3"-4"-5" LETTERS - 21/64"
DEPTH OF PATTERNS FOR 6"-7"-8" LETTERS 21/64"

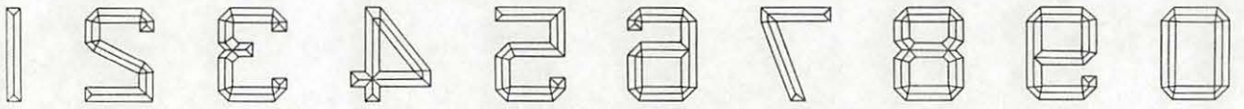


FIGURE PATTERNS FOR CONCRETE POSTS

BOSTON & MAINE R.R.
STANDARD LETTERS AND FIGURES FOR SIGNS AND NOTICES

APPROVED

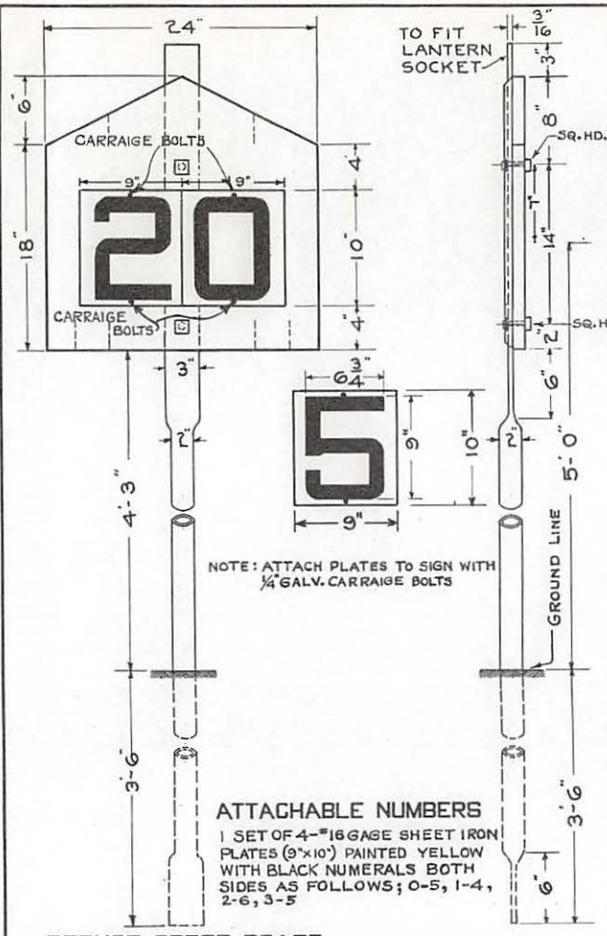
ENGINEER M. OF W.

CHIEF ENGINEER

PLAN	
DRAWN BY: A.S.M.	
CHECKED: E.R.M.	
CORRECT: J.J.R.	
ISSUE	DATE
A	10-20-30
B	2-21-31
C	6-9-31
D	9-20-52

B-REDUCE SPEED BOARD DISTANCE.
C-REVERSE SIDE BLACK.
D-INTERMEDIATE RESUME SPEED BOARD ADDED.
ATTACHABLE NUMBERS ADDED. CHANGED RD-HEAD TO SQ-HEAD BOLTS. ELIMINATED CENTER BOLT HOLES.
CHANGE IN PLATE NUMERALS

K II

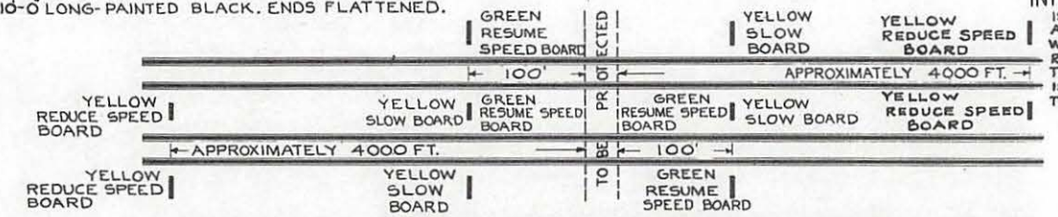


ATTACHABLE NUMBERS

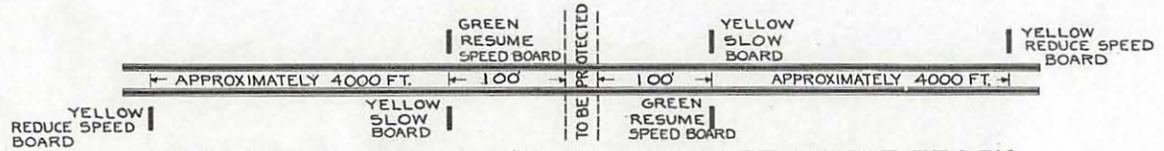
1 SET OF 4-#16 GAGE SHEET IRON PLATES (9"x10") PAINTED YELLOW WITH BLACK NUMERALS BOTH SIDES AS FOLLOWS; 0-5, 1-4, 2-6, 3-5

REDUCE SPEED BOARD

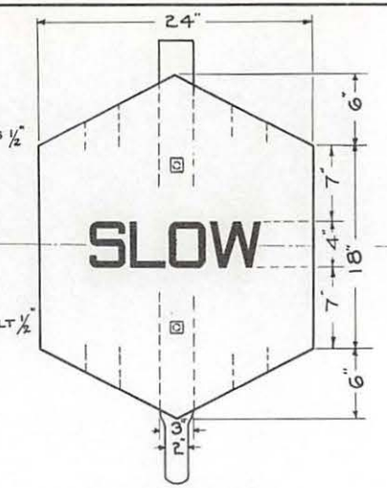
BOARD-1" WHITE PINE WITH CLEATS. PAINTING-YELLOW ON FACE. REVERSE SIDE BLACK. POST-2" BOILER TUBE, 10'-0" LONG-PAINTED BLACK. ENDS FLATTENED.



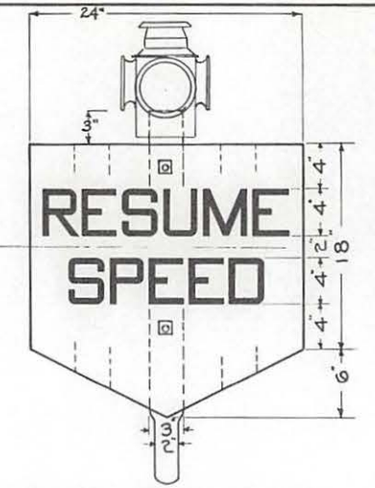
LOCATION OF TEMPORARY SLOW BOARDS-DOUBLE TRACK



LOCATION OF TEMPORARY SLOW BOARDS-SINGLE TRACK



SLOW BOARD

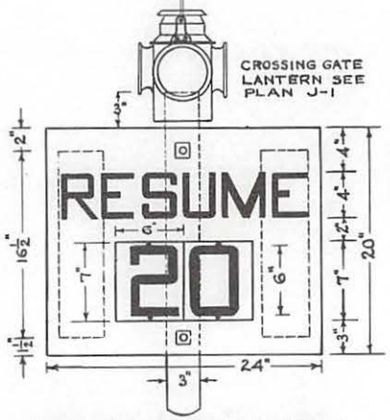


RESUME SPEED BOARD

BOARD-1" WHITE PINE WITH CLEATS
PAINTING-
SLOW BOARD, YELLOW ON FACE WITH BLACK LETTERS, REVERSE SIDE BLACK.
RESUME SPEED BOARD, GREEN ON FACE WITH WHITE LETTERS, REVERSE SIDE BLACK.
INTERMEDIATE RESUME SPEED BOARD, YELLOW ON FACE WITH BLACK LETTERS, REVERSE SIDE BLACK.
POST-2" BOILER TUBE
SLOW BOARD 10' LONG
RESUME SPEED BOARDS 9'-6" LONG

ATTACHABLE NUMBERS-
INTERMEDIATE RESUME SPEED BOARD,
1 SET OF 4-#16 GAGE SHEET IRON PLATES (6"x7") PAINTED YELLOW WITH BLACK NUMERALS BOTH SIDES AS FOLLOWS; 0-5, 1-4, 2-6, 3-5

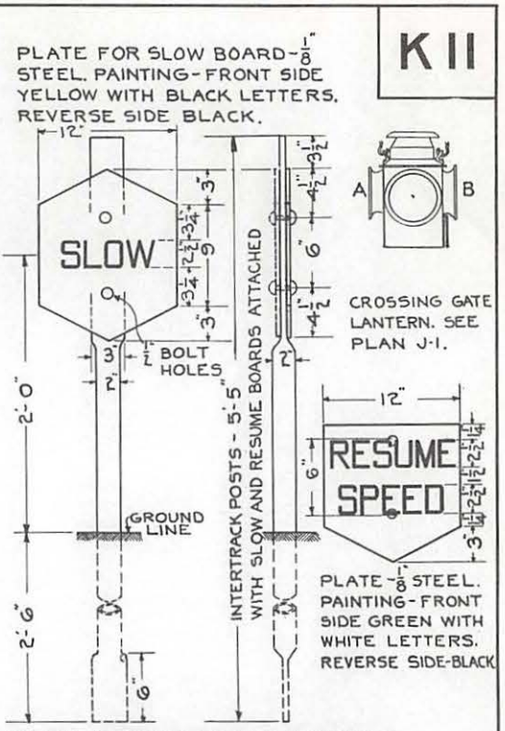
NOTE: ATTACH PLATES TO SIGN WITH 1/4" GALV. CARRAIGE BOLTS



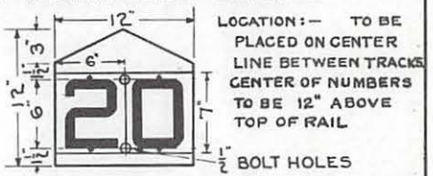
INTERMEDIATE RESUME SPEED BOARD

IS USED WHEN NECESSARY TO HAVE A TEMPORARY SPEED RESTRICTION WITHIN ANOTHER TEMPORARY SPEED RESTRICTION —
THE GREEN RESUME SPEED BOARD IS USED ONLY TO LIFT THE SPEED TO THE FULL TIMETABLE LINE SPEED

PLATE FOR SLOW BOARD-1/8" STEEL. PAINTING-FRONT SIDE YELLOW WITH BLACK LETTERS. REVERSE SIDE BLACK.



INTER-TRACK SLOW BOARDS



LOCATION:— TO BE PLACED ON CENTER LINE BETWEEN TRACKS. CENTER OF NUMBERS TO BE 12" ABOVE TOP OF RAIL

PLATE FOR INTER-TRACK REDUCE SPEED BOARD STEEL PLATE 1/8"x12". PAINTED YELLOW ON FACE, REVERSE SIDE BLACK. ATTACHABLE NUMBERS — 1 SET OF 4-#16 GAGE SHEET IRON PLATES (6"x7") PAINTED YELLOW WITH BLACK NUMERALS BOTH SIDES AS FOLLOWS; 0-5, 1-4, 2-6, 3-5

ATTACH PLATES TO SIGN WITH 1/4" GALV. CARRAIGE BOLTS

BOSTON & MAINE R. R.
STANDARD
TEMPORARY SLOW BOARDS

APPROVED

ENGINEER M. OF W. — CHIEF ENGINEER

PLAN	
DRAWN: A.S.M.	
CHECKED J.W.B.	
CORRECT J.J.R	
ISSUE	DATE.
A	1-30-31
B	5-9-33
C	9-6-33
D	9-6-33
E	11-1-37
F	9-20-52

B - DUMP SIGN ADDED.

C - SIDE TRACK SIGN ADDED.

D - OIL PLANT SIGN ADDED.

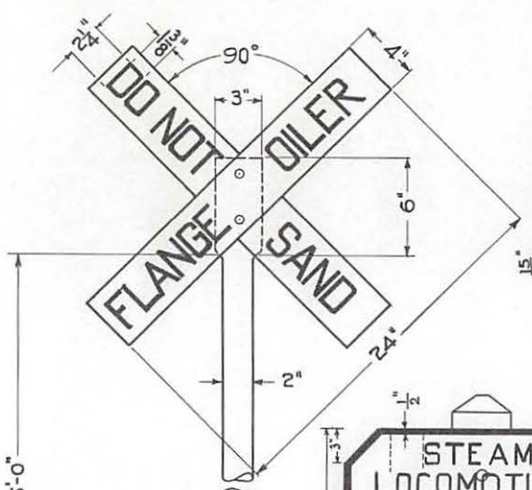
E - SIDE TRACK AIR BRAKE SIGN

F - SIDETRK. SIGN FOR STEAM LOCOMOTIVES ADDED. ELIMINATED CENTER BOLT HOLES.

CHANGED RD.HD. TO SQ.HD. BOLTS ON "DUMPING FORBIDDEN" SIGN.

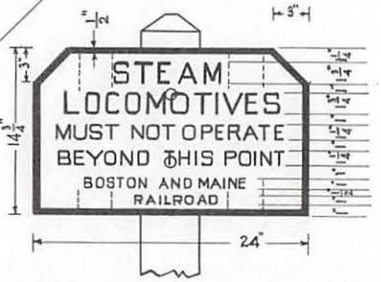
REPLACED ½"x6¼" BOLTS WITH ½"x7" CARRIAGE BOLTS (GALV) ON WOOD BOARD SIGNS.

K12



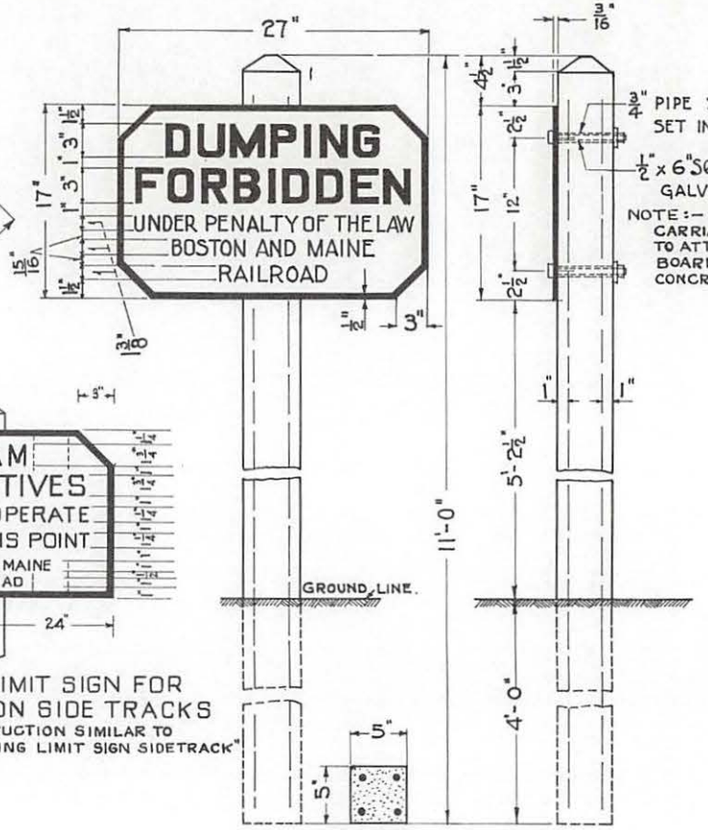
[FLANGE OILER] SIGN

POST - OLD BOILER TUBE 2" DIAM WITH ENDS FLATTENED.
PLATES - 24"x4"x⅛", ATTACHED TO POST WITH ⅜" RIVETS.
PAINTING - YELLOW ON FACE OF SIGN WITH BLACK LETTERS. POST AND BACK OF SIGN BLACK.
LOCATION - 50'-0" FROM OILERS - 11'-0" FROM CENTER OF TRACK ON ENGINEER'S SIDE.



OPERATING LIMIT SIGN FOR STEAM LOCOS. ON SIDE TRACKS

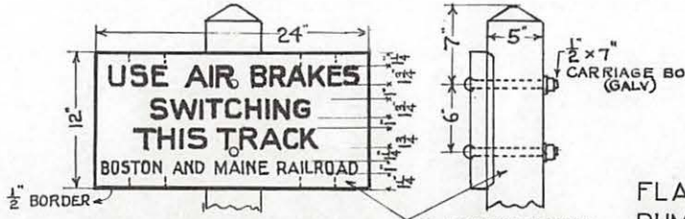
NOTE:- CONSTRUCTION SIMILAR TO "OPERATING LIMIT SIGN SIDETRACK"



SECTION

[DUMPING FORBIDDEN] SIGN

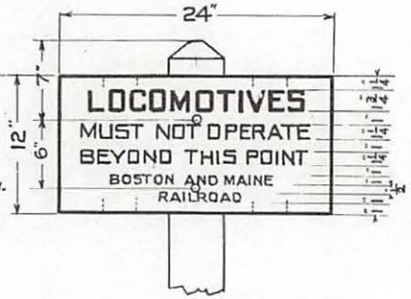
CONCRETE PROPORTIONS 1:2½:3. POST 11'-0" LONG 4'-0" IN GROUND. RODS 4'-⅜" - 10'-8" LG. WITH #10 WIRE FOR SPACING.
SIGN 3/16" STEEL PLATE. PAINTING - FACE WHITE WITH BLACK LETTERS AND BORDER. EDGES AND BACK TO BE BLACK.



SIDE TRACK AIR BRAKE SWITCHING SIGN

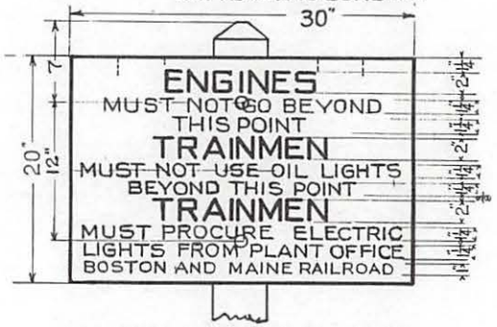
SEE- PLAN K-106 D WHEN METAL SIGN AND WOOD POST IS SPECIFIED.

POST-CONCRETE, 10'-6" LONG 4'-0" IN GROUND. SEE PLAN-K16.
BOARD - 1⅛" WHITE PINE WITH CLEATS.
PAINTING - BOARD WHITE, WITH BLACK LETTERS & BORDER.
LOCATION - ADJACENT TO SWITCH, AT RIGHT ANGLES TO TRACK AND NOT LESS THAN 10'-0" FROM CENTER LINE.



OPERATING LIMIT SIGN SIDE TRACK

POST- PRECAST CONCRETE. SEE STD. PLAN K16. 10'6" LONG, 4'0" IN THE GROUND.
BOARD - 1⅛" WHITE PINE WITH CLEATS.
PAINTING - BOARD WHITE WITH BLACK LETTERS AND BORDER.



OIL PLANT SWITCHING SIGN

POST-PRECAST CONCRETE. SEE STD. PLAN K.16. 11'0" LONG 4'0" IN THE GROUND.
BOARD - 1⅛" WHITE PINE WITH CLEATS.
PAINTING - BOARD WHITE WITH BLACK LETTERS AND BORDER.

BOSTON AND MAINE R.R.

STANDARD SIGNS

FLANGE OILER SIGN. SIDE TRACK SIGN.
DUMPING FORBIDDEN SIGN. OIL PLANT SIGN.
SIDE TRACK AIR BRAKE SWITCHING SIGN.

APPROVED -

H. F. Fifield
ENGINEER M. OF W.

S. J. Pike
CHIEF ENGINEER.

PLAN	
DRAWN: A.S.M.	
CHECKED J.W.B.	
CORRECT J.J.R.	
ISSUE	DATE.
A	1-30-31
B	5-9-33
C	9-6-33
D	9-6-33
E	11-1-37
F	9-20-52

B - DUMP SIGN ADDED.

C - SIDE TRACK SIGN ADDED.

D - OIL PLANT SIGN ADDED.

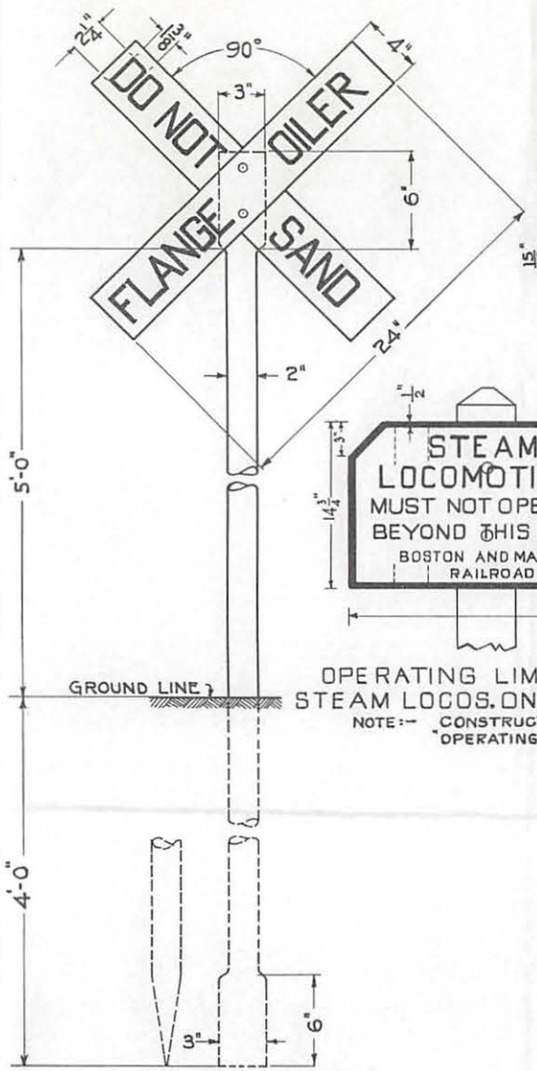
E - SIDE TRACK AIR BRAKE SIGN

F - SIDETRK. SIGN FOR STEAM LOCOMOTIVES ADDED. ELIMINATED CENTER BOLT HOLES.

CHANGED RD.HD TO SQ.HD. BOLTS ON "DUMPING FORBIDDEN" SIGN.

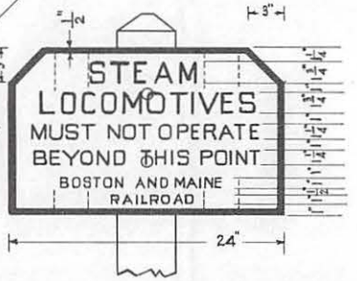
REPLACED ½" × 6¾" BOLTS WITH ½" × 7" CARRIAGE BOLTS (GALV) ON WOOD BOARD SIGNS.

K12



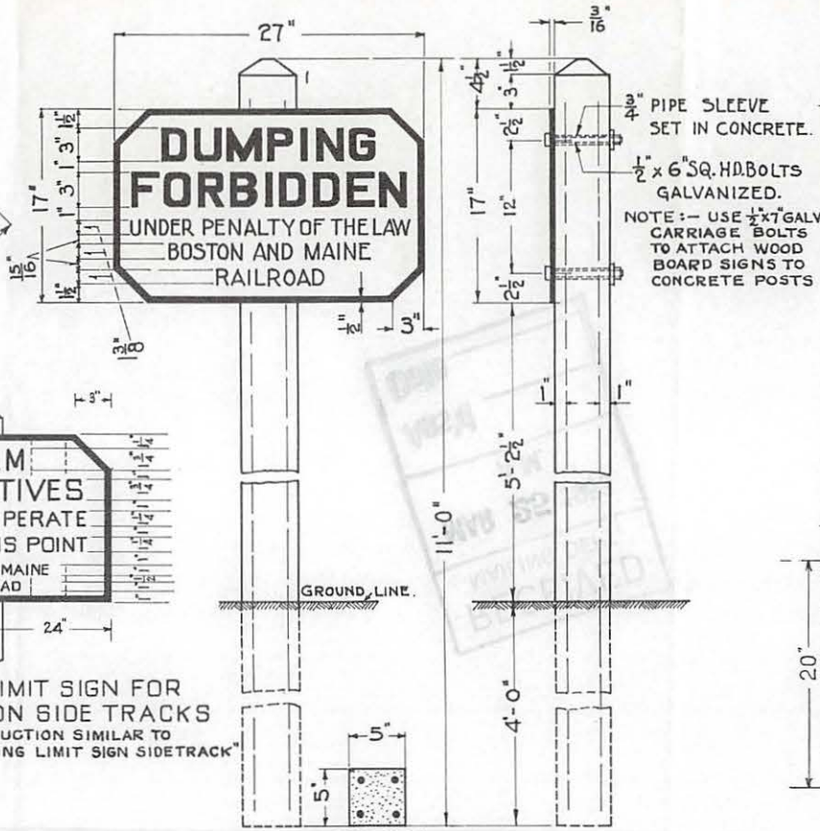
[FLANGE OILER] SIGN

POST - OLD BOILER TUBE 2" DIAM WITH ENDS FLATTENED.
PLATES - 24" × 4" × ⅛", ATTACHED TO POST WITH ⅜" RIVETS.
PAINTING - YELLOW ON FACE OF SIGN WITH BLACK LETTERS. POST AND BACK OF SIGN BLACK.
LOCATION - 50'-0" FROM OILERS - 11'-0" FROM CENTER OF TRACK ON ENGINEER'S SIDE.



OPERATING LIMIT SIGN FOR STEAM LOCOS. ON SIDE TRACKS

NOTE:- CONSTRUCTION SIMILAR TO "OPERATING LIMIT SIGN SIDETRACK"



SECTION

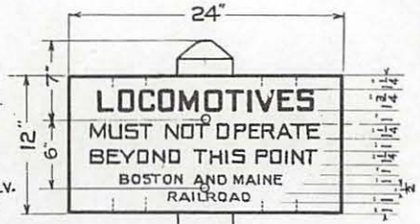
[DUMPING FORBIDDEN] SIGN

CONCRETE PROPORTIONS 1 : 2½ : 3. POST 11'-0" LONG 4'-0" IN GROUND. RODS 4'-⅜" - 10'-8" LG. WITH #10 WIRE FOR SPACING.
SIGN 3/16" STEEL PLATE. PAINTING - FACE WHITE WITH BLACK LETTERS AND BORDER. EDGES AND BACK TO BE BLACK.

¾" PIPE SLEEVE SET IN CONCRETE.

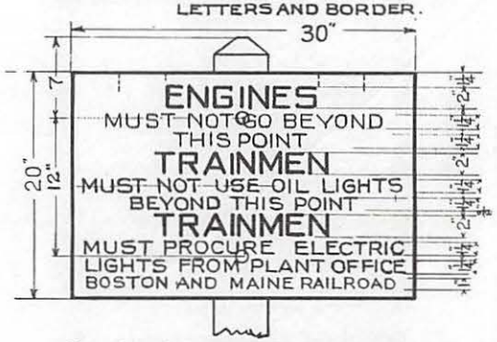
½" × 6" SQ. HD. BOLTS GALVANIZED.

NOTE:- USE ½" × 7" GALV. CARRIAGE BOLTS TO ATTACH WOOD BOARD SIGNS TO CONCRETE POSTS



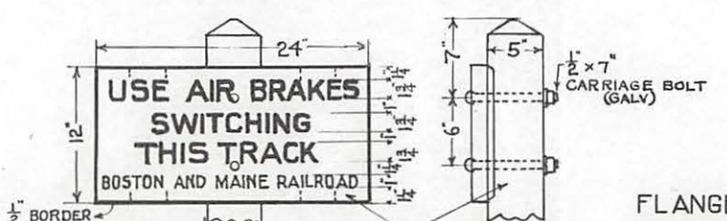
OPERATING LIMIT SIGN SIDE TRACK

POST - PRECAST CONCRETE. SEE STD. PLAN K16. 10'6" LONG. 4'0" IN THE GROUND.
BOARD - 1⅛" WHITE PINE WITH CLEATS.
PAINTING - BOARD WHITE WITH BLACK LETTERS AND BORDER.



OIL PLANT SWITCHING SIGN

POST - PRECAST CONCRETE. SEE STD. PLAN K.16. 11'0" LONG 4'0" IN THE GROUND.
BOARD - 1⅛" WHITE PINE WITH CLEATS.
PAINTING - BOARD WHITE WITH BLACK LETTERS AND BORDER.



SIDE TRACK AIR BRAKE SWITCHING SIGN

SEE- PLAN K-106 D WHEN METAL SIGN AND WOOD POST IS SPECIFIED.

POST - CONCRETE, 10'6" LONG 4'0" IN GROUND. SEE PLAN K16.
BOARD - 1⅛" WHITE PINE WITH CLEATS.
PAINTING - BOARD WHITE, WITH BLACK LETTERS & BORDER.
LOCATION - ADJACENT TO SWITCH, AT RIGHT ANGLES TO TRACK AND NOT LESS THAN 10'0" FROM CENTER LINE.

BOSTON AND MAINE R.R.

STANDARD SIGNS

FLANGE OILER SIGN. SIDE TRACK SIGN.
DUMPING FORBIDDEN SIGN. OIL PLANT SIGN.
SIDE TRACK AIR BRAKE SWITCHING SIGN.

APPROVED -

H. F. Fifield
ENGINEER M. OF W.

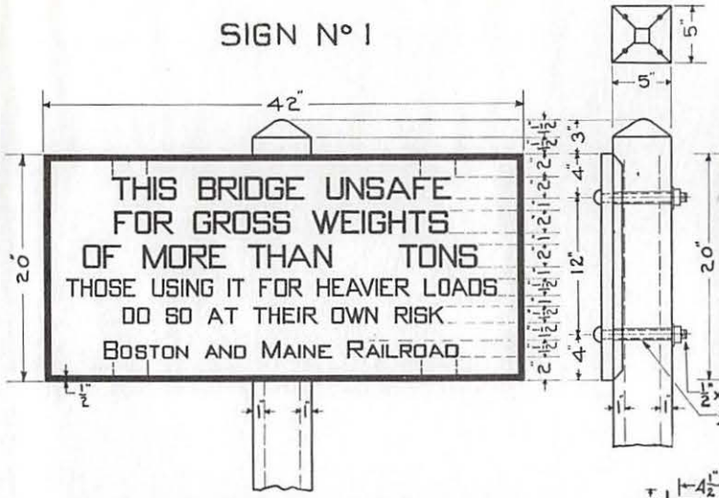
S. J. Pike
CHIEF ENGINEER.

PLAN	
DRAWN BY: A.S.M.	
CHECKED: E.F.B.	
CORRECT: J.J.R.	
ISSUE	DATE
A	8-1-30
B	8-19-31
C	11-1-37
D	3-14-42
E	10-22-52.

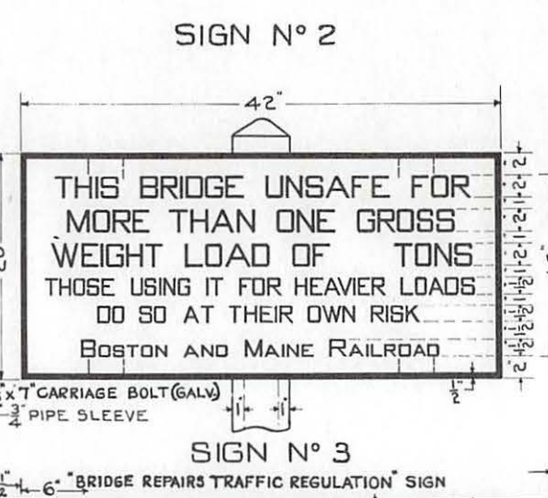
B LETTERING ON LOAD & DIV. SIGNS
C - SIGNS 1 & 2. BOLT GALVANIZED
D - ADDED, BRIDGE CLOSED SIGN
E - ADDED, "BRIDGE DETOUR" AND "TRAFFIC REGULATION" SIGNS ELIMINATED CENTER BOLT HOLES. REPLACED 6¾" BOLTS WITH 7" CARRIAGE BOLTS.

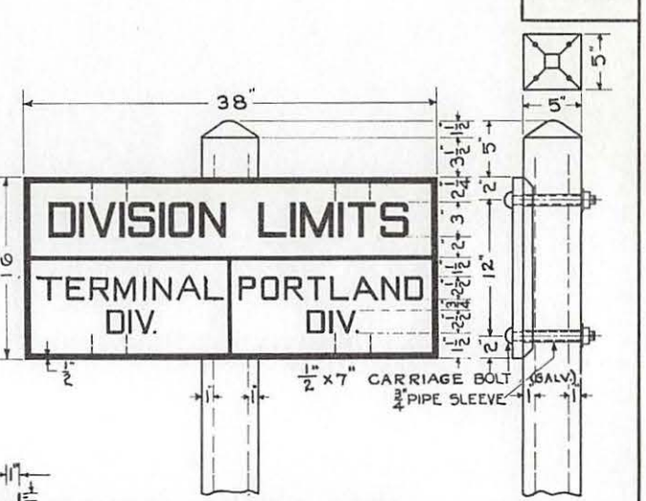
K13

SIGN N° 1



SIGN N° 2

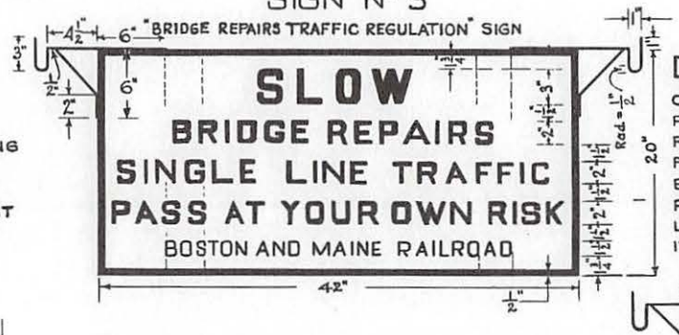




LOAD LIMIT SIGNS FOR HIGHWAY BRIDGES

CONCRETE PROPORTIONS - 3500# CLASS
POST - 11'-6" LONG WITH 4'-0" IN THE GROUND
RODS - 4 - ⅜" ϕ 11'-2" LONG WITH #10 WIRE FOR SPACING
BOARD - 1½" WHITE PINE WITH CLEATS
PAINTING - WHITE WITH BLACK LETTERS AND BORDER
LOCATION - ONE SIGN AT EACH END OF BRIDGE ON RIGHT HAND SIDE IN DIRECTION OF TRAFFIC

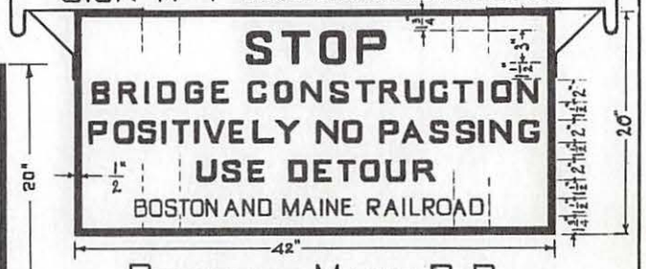
SIGN N° 3

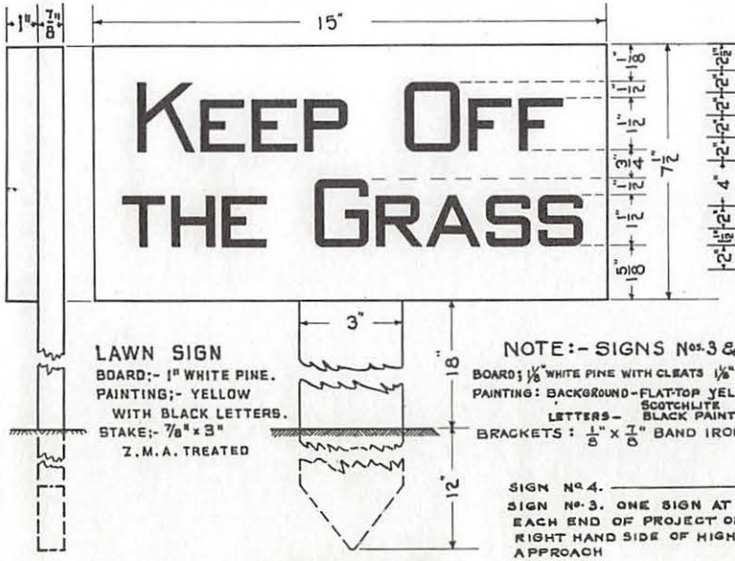


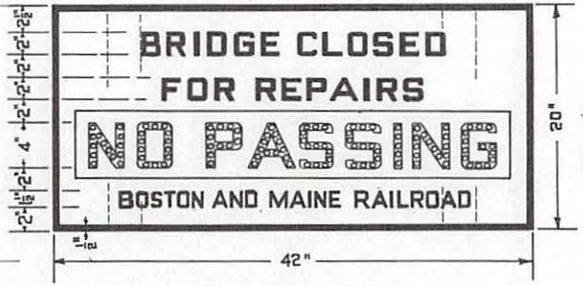
DIVISION LIMITS SIGN

CONCRETE PROPORTIONS - 3500# CLASS
POST - 11'-6" LONG, WITH 4'-0" IN THE GROUND.
RODS - 4 - ⅜" ϕ, 11'-2" LONG, WITH #10 WIRE FOR SPACING.
BOARD - 1½" WHITE PINE WITH CLEATS.
PAINTING - BOARD WHITE WITH BLACK LETTERS AND BORDER.
LOCATION - BOARD PARALLEL TO TRACK, NOT LESS THAN 13' FROM CENTER LINE OF TRACK.

SIGN N° 4 "BRIDGE CONSTRUCTION DETOUR" SIGN







LAWN SIGN
BOARD:- 1" WHITE PINE.
PAINTING:- YELLOW WITH BLACK LETTERS.
STAKE:- ⅞" x 3" Z.M.A. TREATED

LAWN SIGN

NOTE:- SIGNS Nos. 3 & 4
BOARD; ⅛" WHITE PINE WITH CLEATS 1⅛" x 3"
PAINTING: BACKGROUND - FLAT-TOP YELLOW
LETTERS - SCOTCHLITE BLACK PAINT
BRACKETS: ⅛" x 1" BAND IRON

SIGN N° 4. → LOCATION; TO BE ATTACHED TO BARRIER CLOSING THE ROAD AT ENDS OF BRIDGE.
SIGN N° 3. ONE SIGN AT EACH END OF PROJECT ON RIGHT HAND SIDE OF HIGHWAY APPROACH

"BRIDGE CLOSED FOR REPAIRS" SIGN
BOARD; 1⅛" WHITE PINE WITH CLEATS 1⅛" x 3".
PAINTING; BOARD YELLOW WITH BLACK LETTERS AND BORDER.
REFLECTOR BUTTON PANEL; 6" x 38", 18 GUAGE GALVANIZED BONDERIZED STEEL, WITH ⅛" DIAMETER FRONT ENTRANCE CRYSTALS.

BOSTON AND MAINE R. R.

STANDARD SIGNS

HIGHWAY BRIDGE SIGNS
DIVISION LIMITS SIGN, LAWN SIGN

APPROVED

E. F. Fifield
ENGINEER M. OF W.

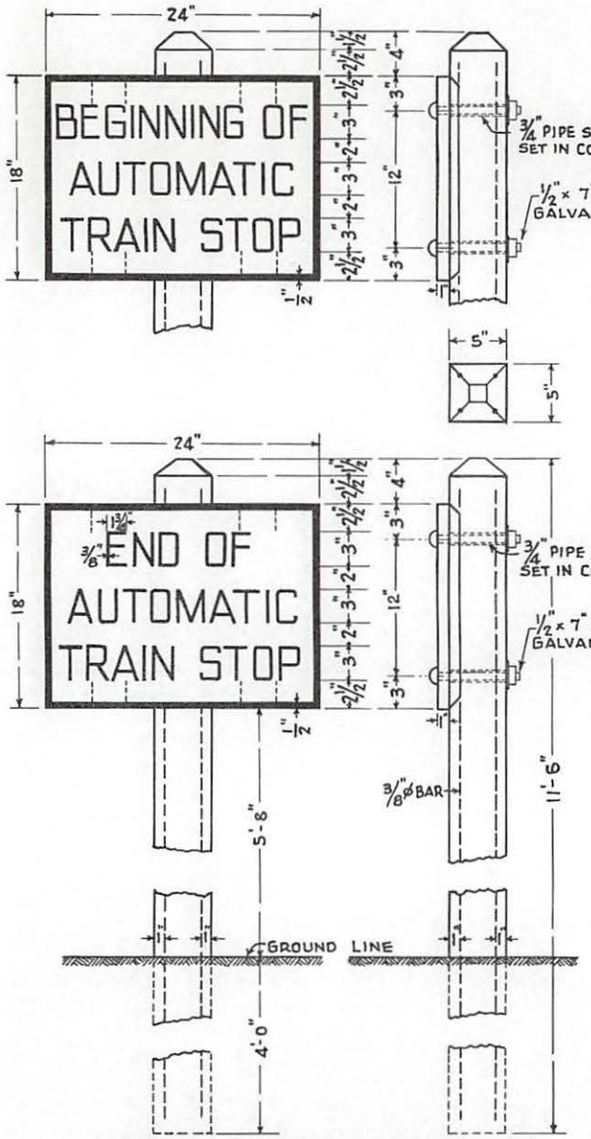
S. H. Gibbs
CHIEF ENGINEER

PLAN	
DRAWN	H.A.R.
CHECKED	
CORRECT	C.F.F.

ISSUE	DATE
B	11-23-49
C	11-22-52

B – REDRAWN
C – ELIMINATED CENTER BOLT HOLES. ADDED ROUTING SIG. DISC. REPLACED 6¾" BOLTS WITH 7" CARRIAGE BOLTS.

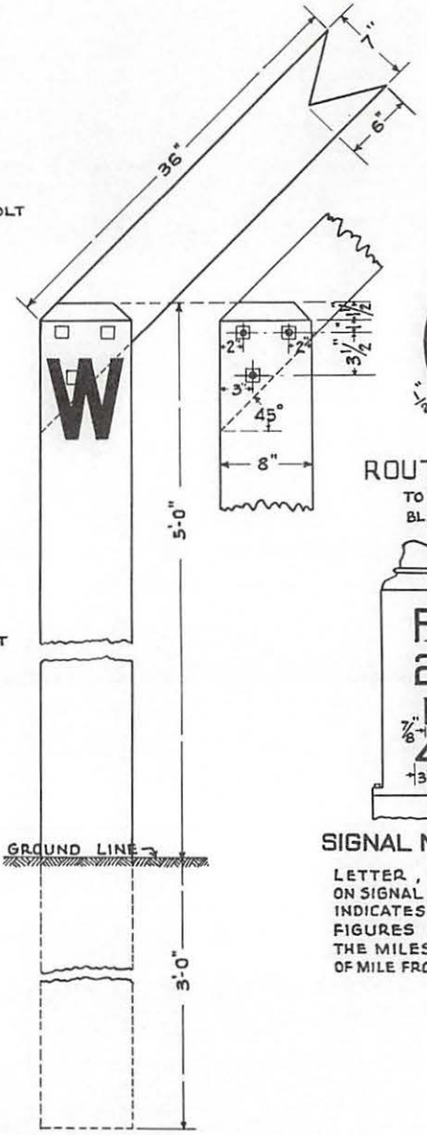
K14



AUTOMATIC TRAIN STOP SIGNS

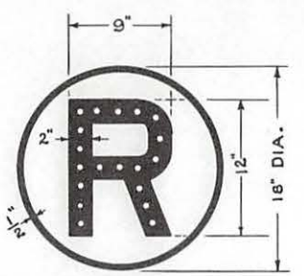
SPECIFICATIONS

POST: CONCRETE: 3500# CLASS. REINFORCING BARS 3/8" ø. 11'-2" LONG WITH #10 WIRE FOR SPACING.
SIGN: 1" WHITE PINE WITH CLEATS.
PAINTING: WHITE WITH BLACK LETTERING AND BORDER.
LOCATION: 11'-6" FROM CENTER OF TRACK.



TRAIN CROSSING APPROACH SIGN

NOTE:
QUADRANT ARM TO BE MADE OF 1" WHITE PINE AND TO BE PAINTED YELLOW. BOLTED TO A SPECIAL WHISTLE OR RING POST WITH HOLES CAST AS SHOWN.
(SEE TIMETABLE – GENERAL SPECIAL INSTRUCTIONS, RULE 33.)

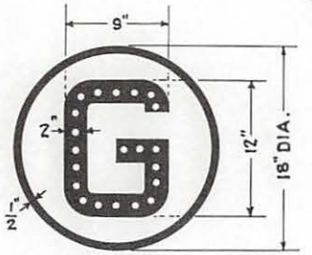


ROUTING SIGNAL DISC

TO BE PAINTED YELLOW WITH BLACK LETTER AND BORDER

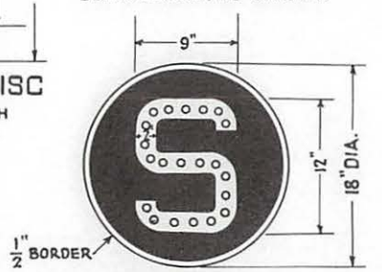
SIGNAL NUMBERING

LETTER, WHEN USED ON SIGNAL NUMBERING INDICATES THE ROUTE. FIGURES REPRESENT THE MILES AND TENTHS OF MILE FROM TERMINAL.



GRADE SIGNAL DISC

TO BE PAINTED YELLOW WITH BLACK LETTER AND BORDER.



SWITCHING SIGNAL DISC

TO BE PAINTED BLACK WITH YELLOW LETTER AND BORDER

NOTE:
DISCS TO BE MADE OF 1/8" STEEL. LETTER TO BE OUTLINED WITH 3/4" WHITE REFLECTER BUTTONS

BOSTON & MAINE R.R.

STANDARD SIGNS AND SIGNALS

AUTOMATIC TRAIN STOP SIGNS, APPROACH SIGN, SIGNAL NUMBERING, DISCS FOR SWITCHING, ROUTING AND GRADE SIGNALS

APPROVED:

C. M. Fox — ENGINEER SIGNALS AND TELEGRAPH

W. F. Fifield — ENGINEER M. OF W.

S. T. Phillips — CHIEF ENGINEER

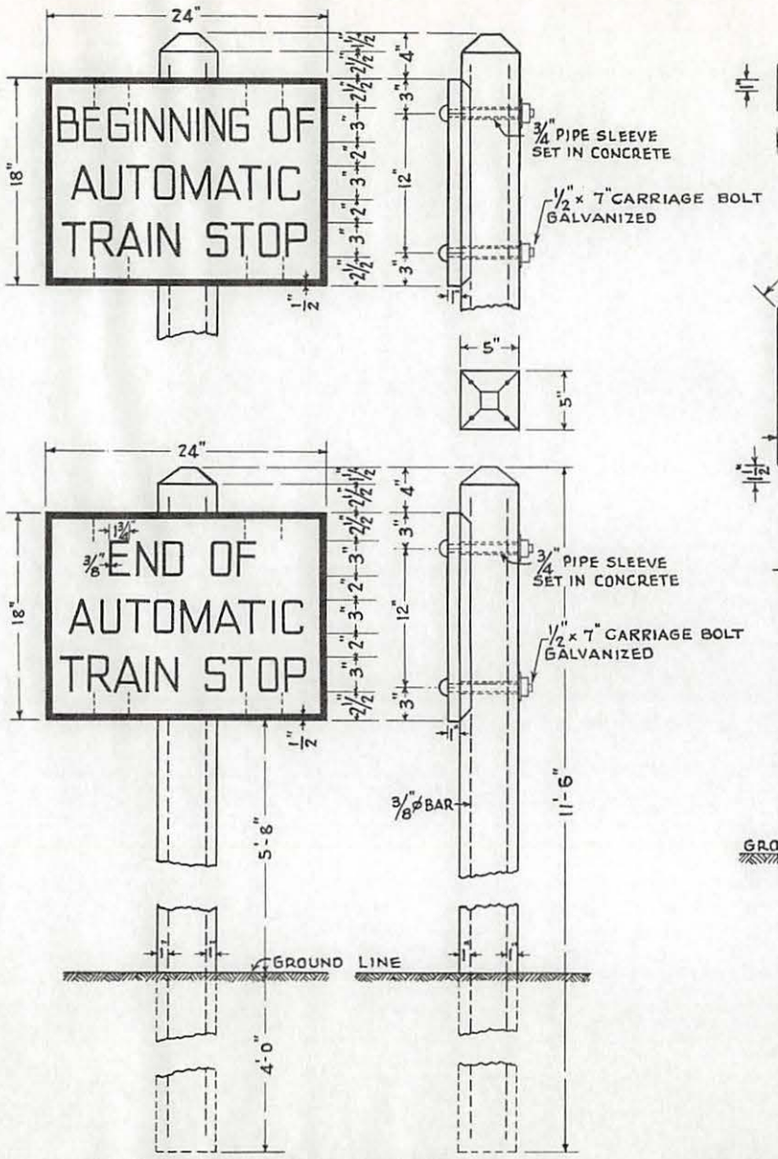
PLAN	
DRAWN	H.A.R.
CHECKED	
CORRECT	C.F.B.

ISSUE	DATE
B	11-23-49
C	11-22-52
D	8-18-56

B - REDRAWN
C - ELIMINATED CENTER BOLT HOLES. ADDED ROUTING SIG DISC. REPLACED 6¾" BOLTS WITH 7" CARRIAGE BOLTS.
D - CHANGE IN DESIGN OF APPROACH SIGN.

NOTE:-AUTOMATIC TRAIN STOP SIGNS DISCONTINUED

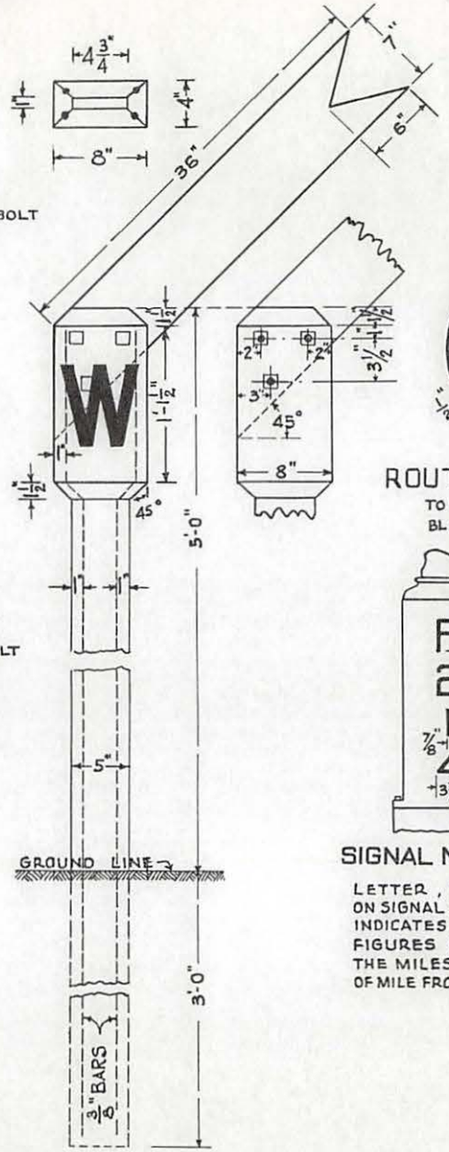
K14



AUTOMATIC TRAIN STOP SIGNS

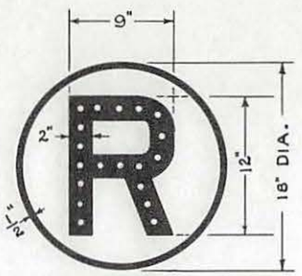
SPECIFICATIONS

POST: CONCRETE: 3500# CLASS. REINFORCING BARS ⅜" ø. 11'-2" LONG WITH #10 WIRE FOR SPACING.
SIGN: 1" WHITE PINE WITH CLEATS.
PAINTING: WHITE WITH BLACK LETTERING AND BORDER.
LOCATION: 11'-6" FROM CENTER OF TRACK.



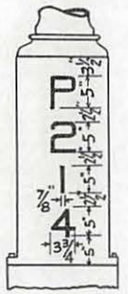
TRAIN CROSSING APPROACH SIGN

NOTE:
QUADRANT ARM TO BE MADE OF 1" WHITE PINE AND TO BE PAINTED YELLOW. BOLTED TO A SPECIAL WHISTLE OR RING POST WITH HOLES CAST AS SHOWN. (SEE STD.-K 18)
(SEE TIMETABLE - GENERAL SPECIAL INSTRUCTIONS, RULE 33.)



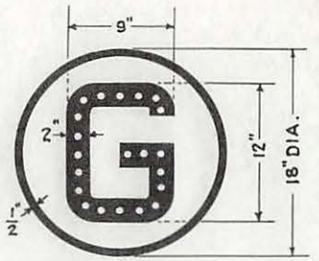
ROUTING SIGNAL DISC

TO BE PAINTED YELLOW WITH BLACK LETTER AND BORDER



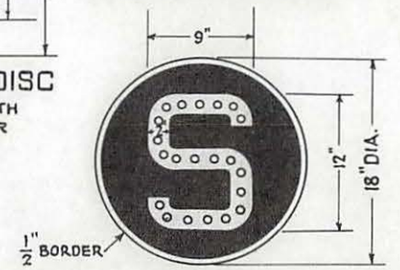
SIGNAL NUMBERING

LETTER, WHEN USED ON SIGNAL NUMBERING INDICATES THE ROUTE. FIGURES REPRESENT THE MILES AND TENTHS OF MILE FROM TERMINAL.



GRADE SIGNAL DISC

TO BE PAINTED YELLOW WITH BLACK LETTER AND BORDER.



SWITCHING SIGNAL DISC

TO BE PAINTED BLACK WITH YELLOW LETTER AND BORDER

NOTE:
DISCS TO BE MADE OF ⅛" STEEL. LETTER TO BE OUTLINED WITH ¾" WHITE REFLECTER BUTTONS

BOSTON & MAINE R.R.

STANDARD SIGNS AND SIGNALS

AUTOMATIC TRAIN STOP SIGNS, APPROACH SIGN, SIGNAL NUMBERING, DISCS FOR SWITCHING, ROUTING AND GRADE SIGNALS

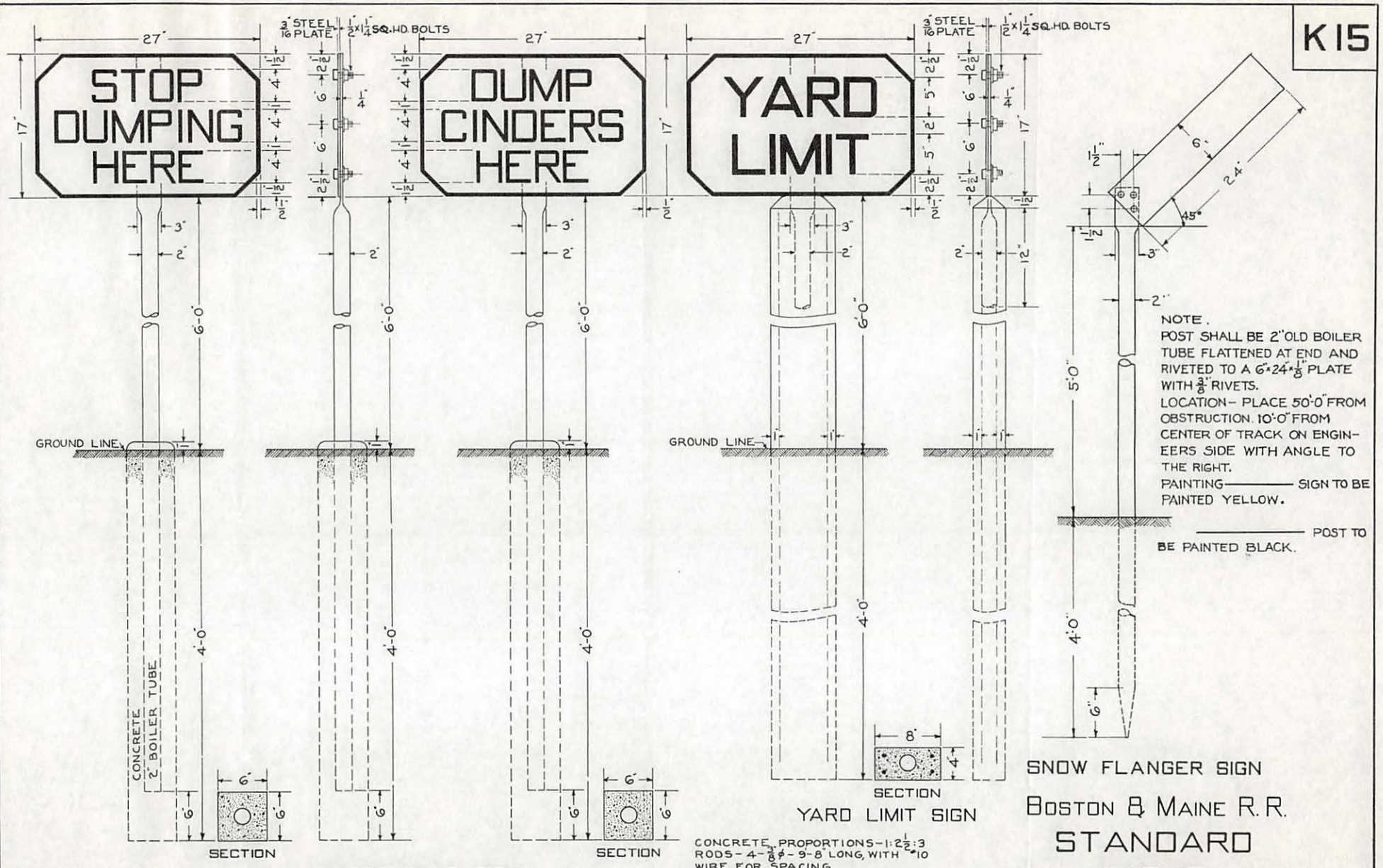
APPROVED:

E. M. Fox	J. K. Dyer	
ENGINEER SIGNALS AND TELEGRAPH	ENGINEER M. OF W.	CHIEF ENGINEER

K15

PLAN	
DRAWN BY: A.S.M.	
CHECKED: E.R.M.	
CORRECT: J.J.R.	
ISSUE	DATE
A	6-10-30
B	11-7-30
C	3-6-52
D	11-7-55

B-FLANGER LOCATION
C-CHANGED RD. HD. TO SQ. HD. BOLTS
D-REMOVED BLACK DOTS FROM SNOW FLANGER SIGN-PAINTED YELLOW



CINDER DUMP SIGNS

CONCRETE PROPORTIONS 1:2½:3
POST- 2" OLD BOILER TUBE PAINTED BLACK AND SET IN CONCRETE BASE.
SIGN- 3/16" STEEL PLATE.
PAINTING - SIGN WHITE WITH BLACK LETTERS AND BORDER.
WHERE SIGN IS TO BE USED ON DOUBLE TRACK, ONE SIDE ONLY IS LETTERED. ON SINGLE TRACK, BOTH SIDES ARE LETTERED.

YARD LIMIT SIGN

CONCRETE. PROPORTIONS- 1:2½:3
RODS- 4-3/8"ϕ- 9'-8" LONG, WITH #10 WIRE FOR SPACING.
SIGN- 3/16" STEEL PLATE BOLTED TO A 2" OLD BOILER TUBE SET IN CONCRETE.
PAINTING- SIGN YELLOW WITH BLACK LETTERS AND BORDER. LETTERED ON BOTH SIDES.

SNOW FLANGER SIGN

BOSTON & MAINE R.R.

STANDARD SIGNS

STOP DUMPING, CINDER DUMP, YARD LIMIT AND SNOW FLANGER

APPROVED

H.S. Gallagher
ENGINEER M. OF W.

J.P. Phillips
CHIEF ENGINEER

PLAN	
DRAWN BY: A.S.M.	
CHECKED: E.R.M.	
CORRECT: J.J.R.	
ISSUE	DATE
A	6-10-30
B	10-22-52

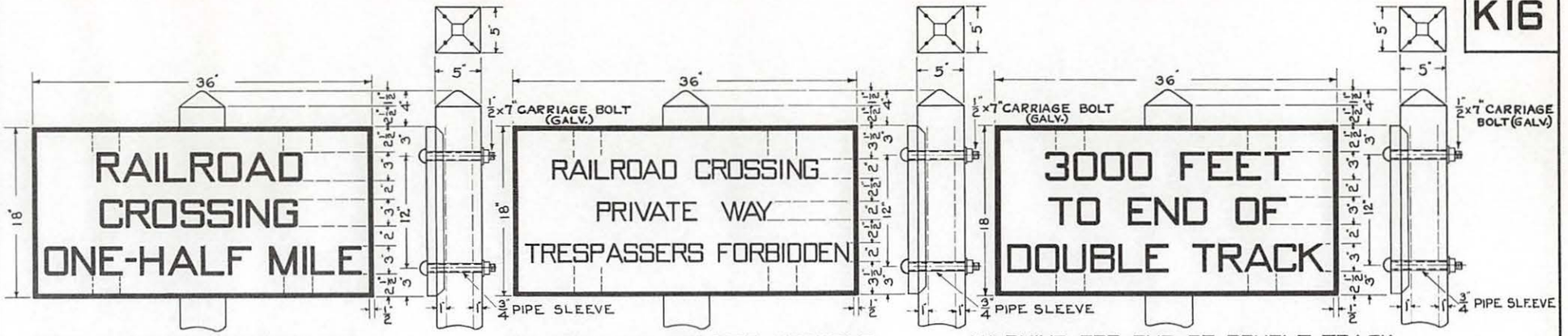
B-

WHISTLE SIGN REFLECTORIZED. ELIMINATED CENTER BOLT HOLES

REPLACED RD. HD. BOLTS WITH SQ. HD. BOLTS ON THE "SPRING SWITCH" SIGN.

REPLACED 1/2" X 6 3/4" BOLTS WITH 1/2" X 7" CARRIAGE BOLTS ON WOOD BOARD SIGNS.

K16


RAILROAD CROSSING ONE-HALF MILE
RAILROAD CROSSING PRIVATE WAY TRESPASSERS FORBIDDEN
3000 FEET TO END OF DOUBLE TRACK
2"x7" CARRIAGE BOLT (GALV.)
PIPE SLEEVE

KNOW NOTHING CROSSING SIGN

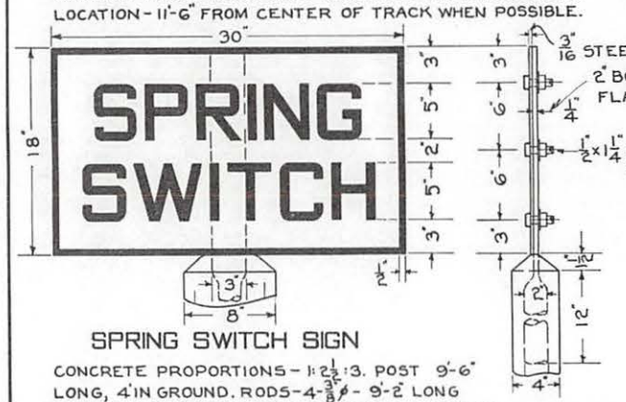
CONCRETE PROPORTIONS- 1:2½:3 - POST 11'-6" - 4' IN GROUND.
RODS- 4-3/8"ϕ-11'-2" LONG, WITH #10 WIRE FOR SPACING.
BOARD-1⅛" WHITE PINE WITH CLEATS.
PAINTING- BOARD WHITE WITH BLACK LETTERS AND BORDER.
LOCATION- 11'-6" FROM CENTER OF TRACK WHEN POSSIBLE.

WARNING FOR PRIVATE CROSSING

CONCRETE PROPORTIONS-1:2½:3-POST-11'-0" 4' IN GROUND.
RODS-4-3/8"ϕ-10'-8" LONG, WITH #10 WIRE FOR SPACING.
BOARD-1⅛" WHITE PINE WITH CLEATS.
PAINTING-BOARD WHITE WITH BLACK LETTERS AND BORDER.

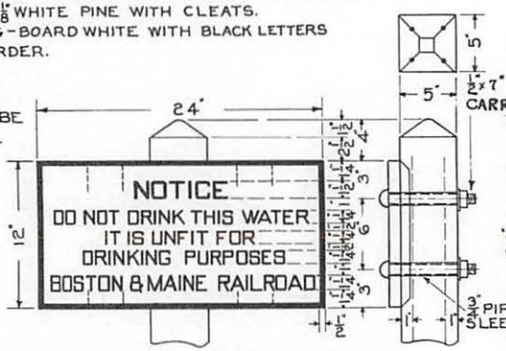
WARNING FOR END OF DOUBLE TRACK

CONCRETE PROPORTIONS-1:2½:3- POST 11'-6", 4' IN GROUND.
RODS- 4-3/8"ϕ-11'-2" LONG, WITH #10 WIRE FOR SPACING.
BOARD-1⅛" WHITE PINE WITH CLEATS.
PAINTING BOARD WHITE WITH BLACK LETTERS & BORDER.
LOCATION- 11'-6" FROM CENTER OF TRACK WHEN POSSIBLE.



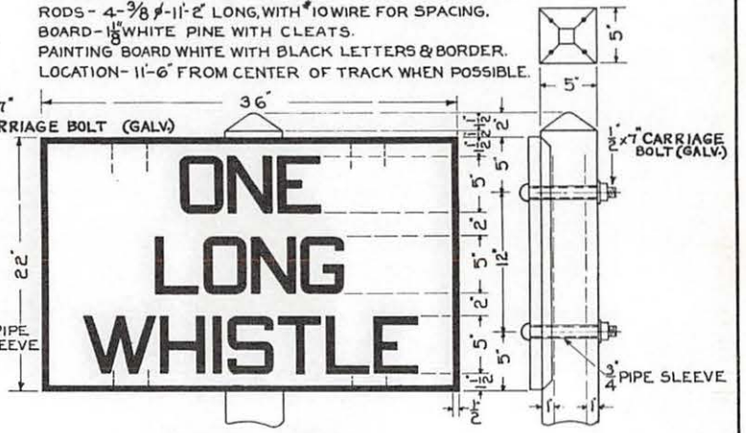
SPRING SWITCH SIGN

CONCRETE PROPORTIONS- 1:2½:3. POST 9'-6" LONG, 4' IN GROUND. RODS-4-3/8"ϕ- 9'-2" LONG WITH #10 WIRE FOR SPACING. PAINTING- PLATE TO BE WHITE WITH BLACK LETTERS AND BORDER ON BOTH SIDES. LOCATION- 11'-3" FROM CENTER LINE OF TRACK OPPOSITE SW. POINT. LEFT SIDE..



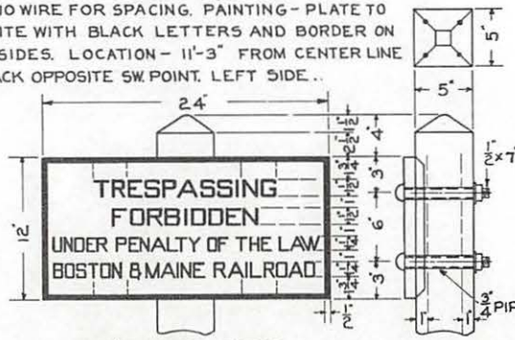
CONTAMINATED WATER SIGN

CONCRETE PROPORTIONS-1:2½:3-POST 10'-6"-4' IN GROUND.
RODS-4-3/8"ϕ-10'-2" LONG, WITH #10 WIRE FOR SPACING.
BOARD-1⅛" WHITE PINE WITH CLEATS.
PAINTING-BOARD WHITE WITH BLACK LETTERS AND BORDER.



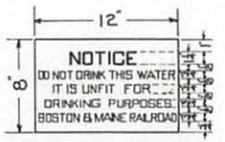
WHISTLE SIGN

CONCRETE PROPORTIONS- 1:2½:3-POST 11'-6" - 4' IN GROUND.
RODS- 4-3/8"ϕ-11'-2" LONG, WITH #10 WIRE FOR SPACING.
BOARD-1⅛" WHITE PINE WITH CLEATS.
PAINTING- BOARD: FLAT TOP WHITE SCOTCHLITE WITH BLACK LETTERS AND BORDER
LOCATION- 11'-6" FROM CENTER OF TRACK WHEN POSSIBLE.



WARNING SIGN

CONCRETE PROPORTIONS - 1:2½:3 - POST 10'-6" - 4' IN GROUND.
RODS- 4-3/8"ϕ-10'-2" LONG, WITH #10 WIRE FOR SPACING.
BOARD-1⅛" WHITE PINE WITH CLEATS.
PAINTING- BOARD WHITE WITH BLACK LETTERS AND BORDER.



SIGN TO BE PLACED ABOVE FAUCETS

BOSTON & MAINE R. R.
STANDARD
SIGNS AND NOTICES
WITH
CONCRETE POSTS

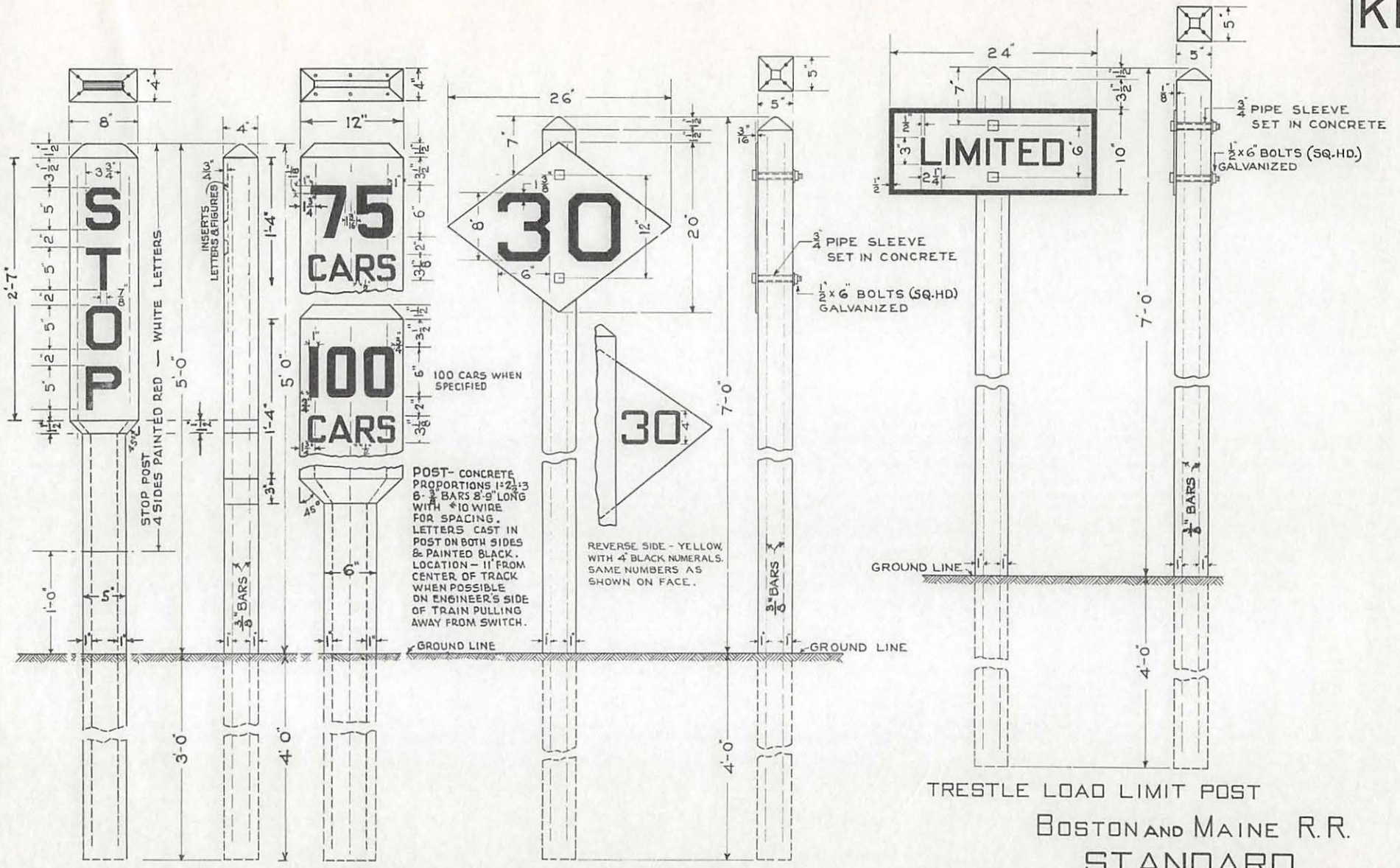
APPROVED
H. F. Fitzgerald
ENGINEER M. OF W.

CHIEF ENGINEER

PLAN	
DRAWN: A.S.M.	
CHECKED: E.F.B.	
CORRECT: J.J.R.	
ISSUE	DATE
A	12-30-29
B	7-29-30
C	8-19-31
D	1-30-36
E	10-22-52
F	8-18-56

B-SPEED POST NUMBERS.
C-FOULING POST REMOVED.
D-CAR LENGTHS POST ADDED
E-ELIMINATED CENTER BOLT HOLES
F-CHANGE IN POST DESIGN STOP POST-CAR LENGTH

K17


STOP
STOP POST
4 SIDES PAINTED RED — WHITE LETTERS
INSERTS LETTERS & FIGURES
75 CARS
100 CARS
100 CARS WHEN SPECIFIED
POST- CONCRETE PROPORTIONS 1:2½:3
6- ¾" BARS 8'-9" LONG WITH #10 WIRE FOR SPACING.
LETTERS CAST IN POST ON BOTH SIDES & PAINTED BLACK.
LOCATION - 11' FROM CENTER OF TRACK WHEN POSSIBLE ON ENGINEER'S SIDE OF TRAIN PULLING AWAY FROM SWITCH.
GROUND LINE
30
REVERSE SIDE - YELLOW, WITH 4" BLACK NUMERALS. SAME NUMBERS AS SHOWN ON FACE.
PIPE SLEEVE SET IN CONCRETE
¾"x6" BOLTS (SQ.HD) GALVANIZED
LIMITED
PIPE SLEEVE SET IN CONCRETE
¾"x6" BOLTS (SQ.HD.) GALVANIZED
¾" BARS
GROUND LINE
7'-0"
4'-0"
3'-0"
4'-0"
4'-0"

STOP POST CAR LENGTHS (WEIGHT = APPROX. 272 LBS.) SPEED RESTRICTION POST

TRESTLE LOAD LIMIT POST

BOSTON AND MAINE R.R.

STANDARD SIGNS AND SIGN POSTS

STOP, SPEED RESTRICTION TRESTLE LOAD LIMIT CAR LENGTHS

SPECIFICATIONS

STOP POST

CONCRETE PROPORTIONS - 1:2½:3
BARS-4-#3-7'-8" LONG. WITH #10 WIRE FOR SPACING.
LETTERS-TO BE CAST IN THE POSTS.
LOCATION-10' FROM CENTER OF TRACK WHEN POSSIBLE.
APPROX. WEIGHT 202 LBS.

SPEED RESTRICTION POST

CONCRETE PROPORTIONS - 1:2½:3
BARS-4-#3 - 10'-8" LONG. WITH #10 WIRE FOR SPACING.
PLATE - 3/16" STEEL PUNCHED FOR ½" BOLTS.
PAINTING - PLATE TO BE YELLOW WITH BLACK LETTERS.
LOCATION - POST 11' FROM CENTER OF TRACK WHEN POSSIBLE.
APPROX. WEIGHT 305 LBS.

TRESTLE LOAD LIMIT POST

CONCRETE PROPORTIONS - 1:2½:3
BARS-4-#3 - 10'-8" LONG. WITH #10 WIRE FOR SPACING.
PLATE - ⅛" STEEL PUNCHED FOR ½" BOLTS.
PAINTING - PLATE TO BE YELLOW WITH BLACK LETTERS AND BORDER.
LOCATION - POST 11' FROM CENTER OF TRACK WHEN POSSIBLE.
APPROX. WEIGHT 305 LBS.

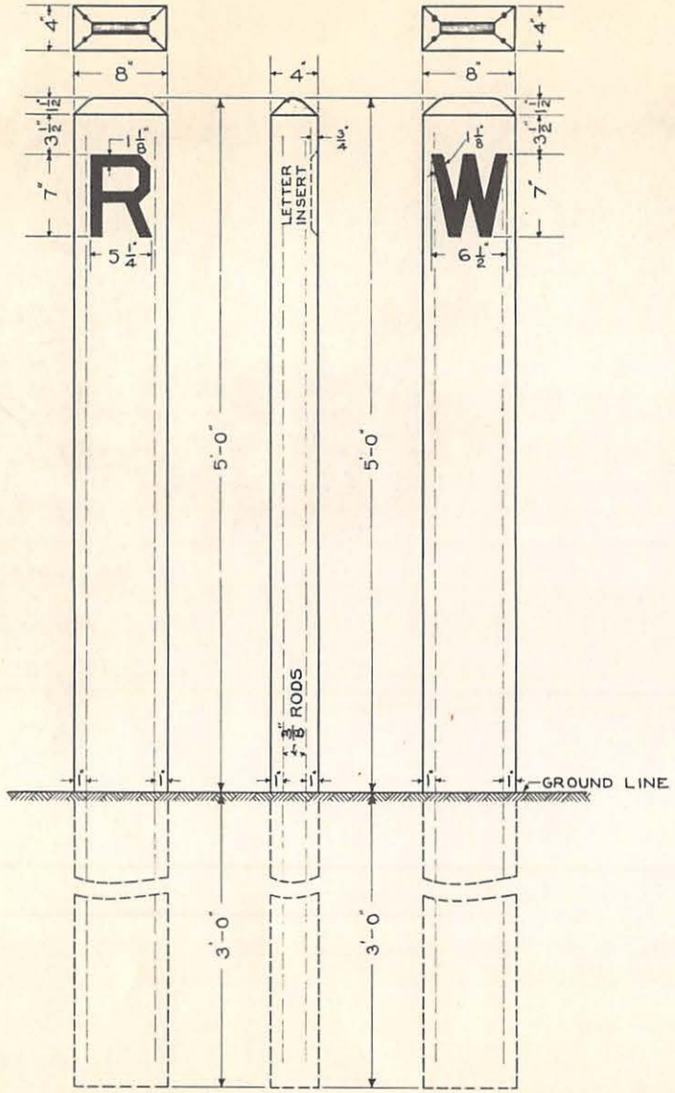
APPROVED

ENGINEER M. OF W. CHIEF ENGINEER

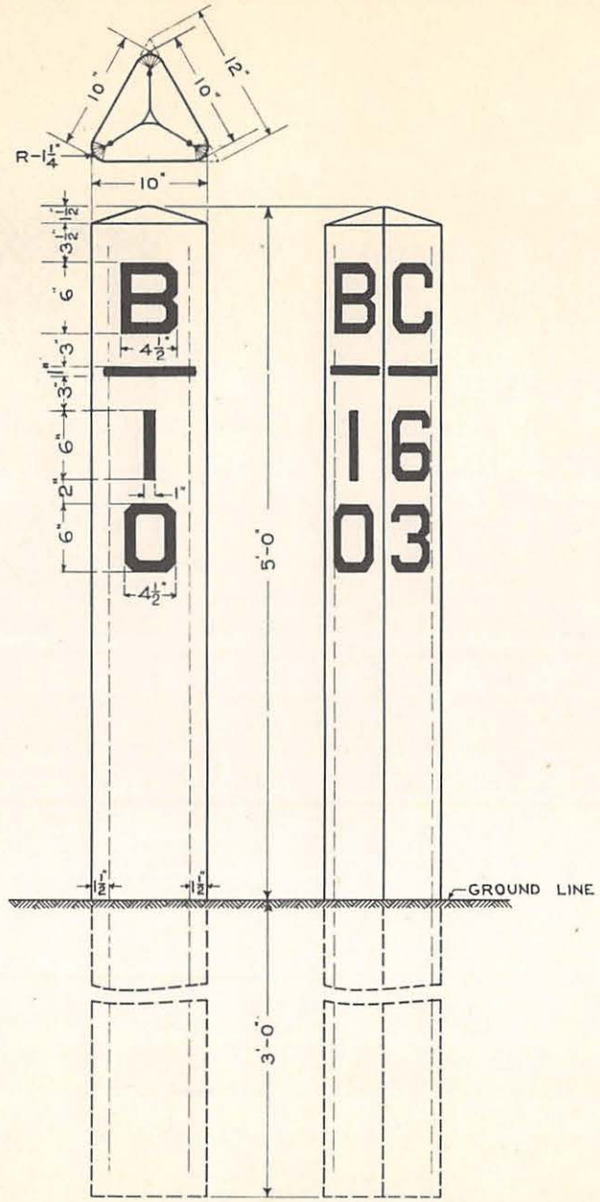
PLAN	
DRAWN: A.S.M.	
CHECKED: E.F.B.	
CORRECT: J.J.R.	
ISSUE	DATE
A	12-30-29
B	5-18-42

B-BAR ADDED ON MILE POST

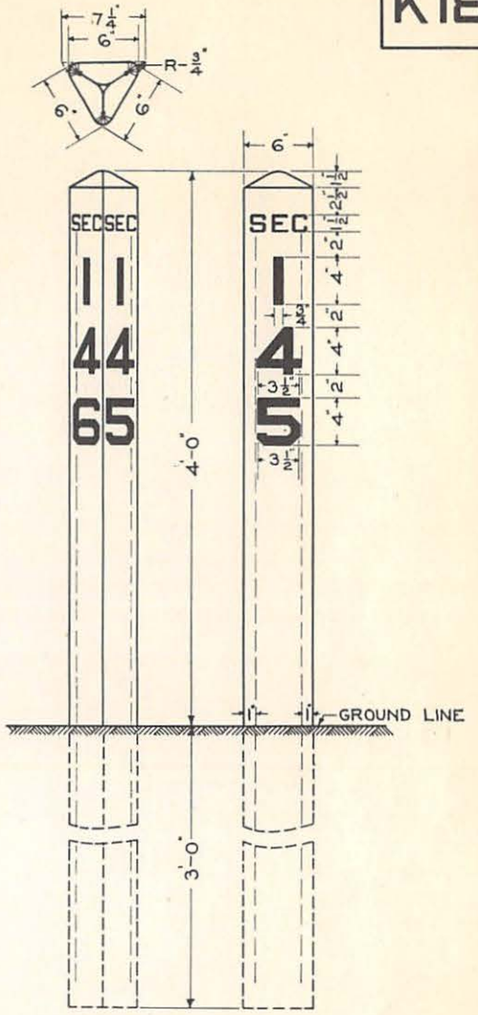
K18



RING POST WHISTLE POST



MILE POST



SECTION POST

BOSTON & MAINE R.R.

STANDARD CONCRETE SIGN POSTS

RING, WHISTLE, MILE AND SECTION

SPECIFICATIONS

RING AND WHISTLE POSTS

CONCRETE PROPORTIONS - 3500# CLASS
RODS - 4 - 3/8" ø - 7'-8" LONG. WITH #10 WIRE FOR SPACING.
LETTERS - R. & W. TO BE CAST IN THE POSTS.
PAINTING - LETTERS TO BE BLACK.
LOCATION - 10' FROM CENTER OF TRACK WHEN POSSIBLE.
APPROX. WEIGHT 275 LBS.

MILE POST

CONCRETE PROPORTIONS - 3500# CLASS
RODS - 3 - 3/8" ø - 7'-8" LONG. WITH #10 WIRE FOR SPACING.
LETTERS AND FIGURES ON TWO FRONT SIDES TO BE CAST IN POSTS.
PAINTING - LETTERS & FIGURES BLACK.
LOCATION - MINIMUM DISTANCE FROM CENTER LINE OF TRACK - 17'-6".
APPROX. WEIGHT 510 LBS.

SECTION POST

CONCRETE PROPORTIONS - 3500# CLASS
RODS - 3 - 3/8" ø - 6'-8" LONG. WITH #10 WIRE FOR SPACING.
LETTERS AND FIGURES ON TWO FRONT SIDES TO BE CAST IN POSTS.
PAINTING - LETTERS & FIGURES BLACK.
LOCATION - 10' FROM CENTER LINE OF TRACK WHEN POSSIBLE.
APPROX. WEIGHT 165 LBS.

Approved:

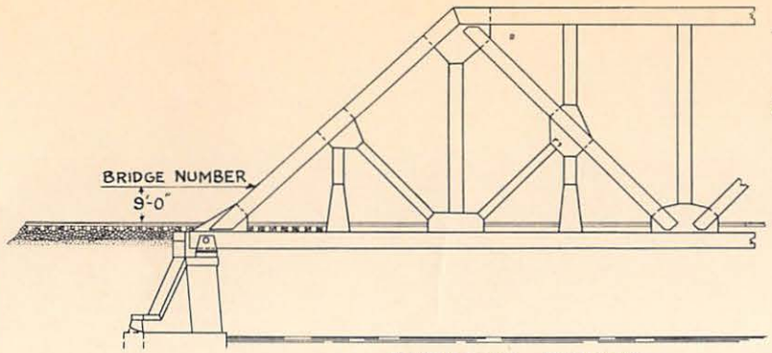
H. F. Fifield
Engineer M. of W.

Chief Engineer.

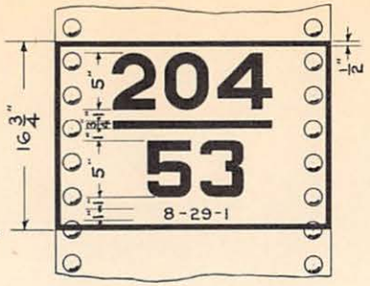
PLAN	
DRAWN BY P.L.D.	
CHECKED A.S.M.	
CORRECT J.J.R.	
ISSUE	DATE
A	12-30-29
B	10-15-31
C	2-1-39

B- CULVERT MARKER NOTE
C-APPROVAL DATE

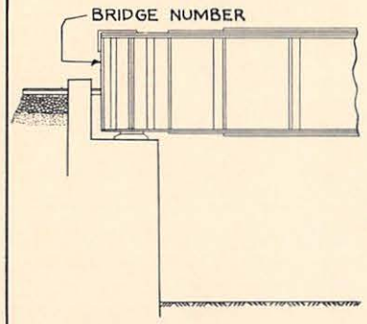
K-19

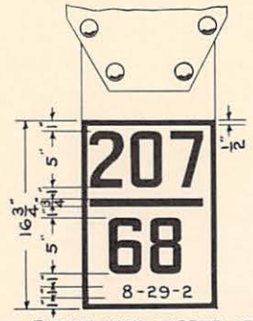


THROUGH BRIDGE



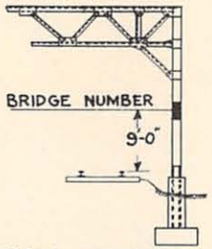
RIGHT HAND END POST OF TRUSSES



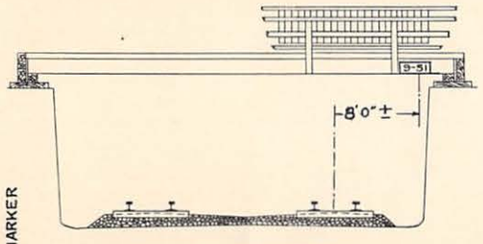


HALF THROUGH BRIDGE

RIGHT HAND GIRDER OF GIRDERS SIGN TO BE AS HIGH AS POSSIBLE



SIGNAL BRIDGE
RIGHT HAND POST

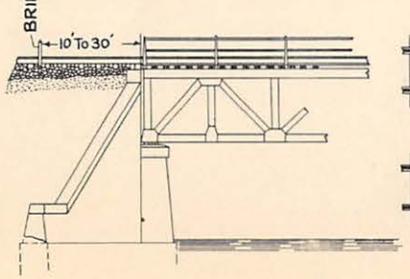


HIGHWAY BRIDGE

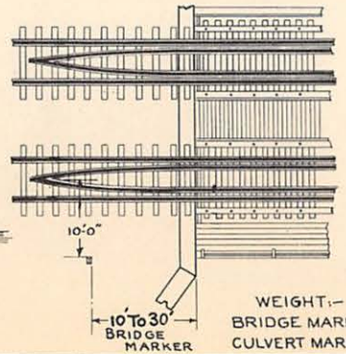
A- 3 LETTERS-1'-6"
4 " " -2'-0"
5 " " -2'-4"

BRIDGE NUMBER BOARD

ON WOOD HIGHWAY BRIDGES USE BRIDGE NUMBER BOARD ⅞" THICK
ON STEEL HIGHWAY BRIDGES MARK NUMBERS ON METAL WHEN POSSIBLE.



DECK BRIDGE



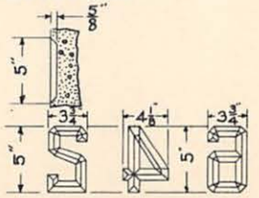
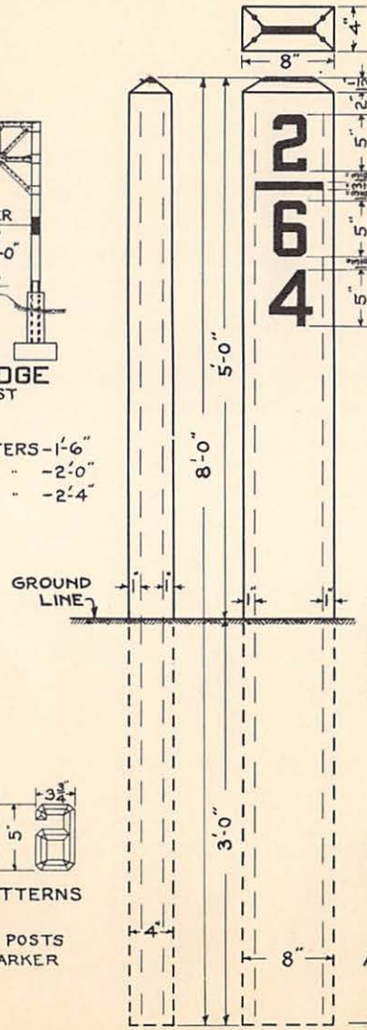
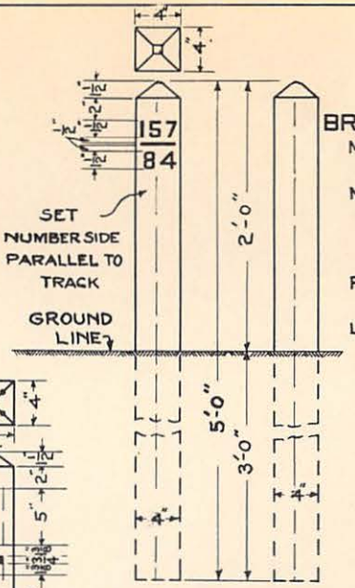


FIGURE PATTERNS FOR CONCRETE POSTS BRIDGE MARKER

WEIGHT:-
BRIDGE MARKER-APPROX. WT. 275 LBS.
CULVERT MARKER-APPROX. WT. 85 LBS.



BRIDGE MARKER



CULVERT MARKER

BRIDGE & CULV. MARKER

MATERIAL - CONCRETE PROPORTIONS - 1:2½:3. RODS ⅜" Ø ROUND.
NUMBERS - SIZES AS SHOWN. FIGURE PATTERNS TO BE SET IN CONCRETE FORMS FOR INDENTING ON MARKERS.
PAINTING - FIGURES TO BE PAINTED BLACK.
LOCATION - CULVERT MARKERS ONE TO EACH CULVERT. ON RIGHT HAND SIDE OF TRACK IN DIRECTION OF MILEAGE. TO BE SET 10' FROM CENTER LINE OF TRACK ON CENTER LINE OF CULVERT WHEN POSSIBLE. BRIDGE MARKERS ONE WITH NUMBERS ON TWO SIDES ON BRIDGES LESS THAN 200' LONG. TWO WITH NUMBER ON ONE SIDE ON BRIDGES MORE THAN 200' SET ON RIGHT HAND SIDE OF TRACK IN GENERAL DIRECTION OF TRAFFIC.

BRIDGE NUMBERING

LARGE FIGURES SHOW NUMBER OF BRIDGE EXPRESSED IN MILES AND HUNDREDTHS FROM TERMINAL TO CENTER OF BRIDGE: THUS

WHOLE MILES
HUNDREDTHS OF A MILE

THE BRIDGE NUMBERS MUST BE PLACED ON BOTH SIDES OF THE BRIDGE ON THE RIGHT HAND SIDE IN GENERAL DIRECTION OF TRAFFIC SO THEY WILL BE LEGIBLE FROM THE FRONT AND REAR ENDS OF A TRAIN.

PAINTING - FIGURES TO BE PAINTED BLACK ON WHITE BACK GROUND. DATE OF PAINTING TO BE MARKED AT BOTTOM OF SIGN IN 1" LETTERS.

STANDARD BRIDGE MARKERS SHALL BE USED AT ALL OPENINGS OF 10' CLEAR SPAN AND OVER, WHERE THE OPENING CONSISTS OF A SINGLE SPAN OR A SERIES OF PIPES OR BOXES WHOSE TOTAL CLEAR WIDTH EQUALS 10'. STANDARD CULVERT MARKERS SHALL BE INSTALLED AT ALL OPENINGS LESS THAN 10' IN THE CLEAR, WHETHER MEASURED SINGLY OR COLLECTIVELY.

BOSTON & MAINE R. R.

STANDARD BRIDGE NUMBER SIGNS AND BRIDGE & CULVERT MARKERS

Approved

H. F. Figures
Engineer M. of W.

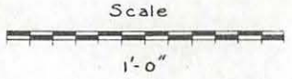
W. T. Cummings
Chief Engineer

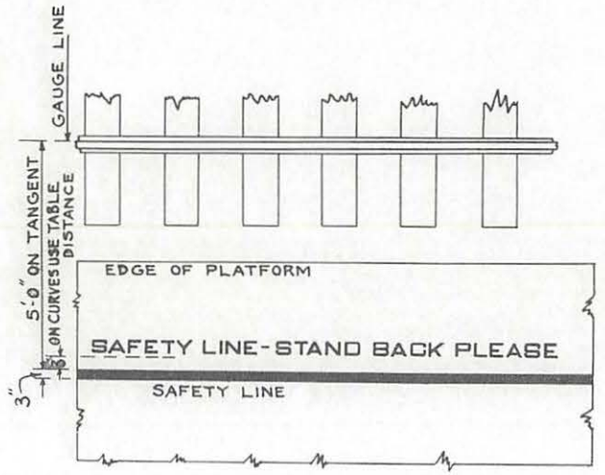
PLAN	
DRAWN BY P.L.D.	
CHECKED BY F.A.T.	
CORRECT J.J.R.	
ISSUE	DATE
A	10-11-'27
B	5-1-'29

B-CHANGE IN COLOR

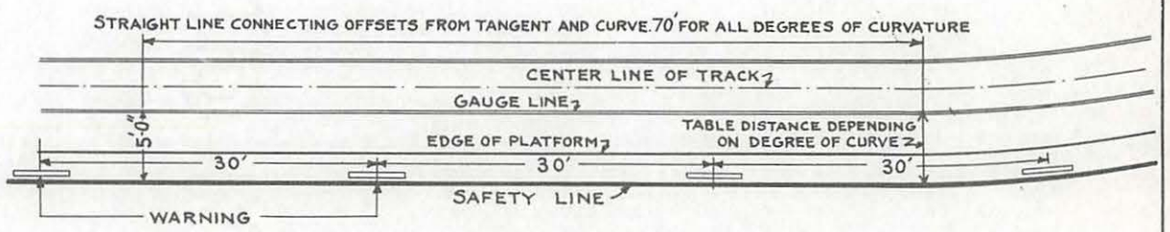
K20

STENCIL FOR WARNING SIGN





SKETCH
SHOWING LOCATION OF SAFETY LINE



SKETCH SHOWING METHOD OF LAYING OUT
SAFETY LINE ON CURVES.

NOTE

SAFETY LINE AND WARNING "SAFETY LINE-STAND BACK PLEASE" SHALL BE PAINTED YELLOW AS INDICATED ON ALL CONCRETE BRICK OR WOOD PLATFORMS. ON CONCRETE OR BRICK PLATFORMS SURFACE SHALL FIRST BE ROUGHNED FOR WIDTH OF LINE AND LETTERED WARNING.

DEGREE OF CURVE	TO SAFETY LINE
1	5'-1"
2	5 2
3	5 3
4	5 4
5	5 5
6	5 6
7	5 7
8	5 8
9	5 9
10	5 10
11	5 11
12	6 0
13	6 1
14	6 2
15	6 3
16	6 4

TABLE
SHOWING DISTANCE FROM GAUGE OF RAIL TO SAFETY LINE FOR USE ON CURVES.

BOSTON & MAINE R.R.

STANDARD

SAFETY LINE FOR STATION PLATFORM

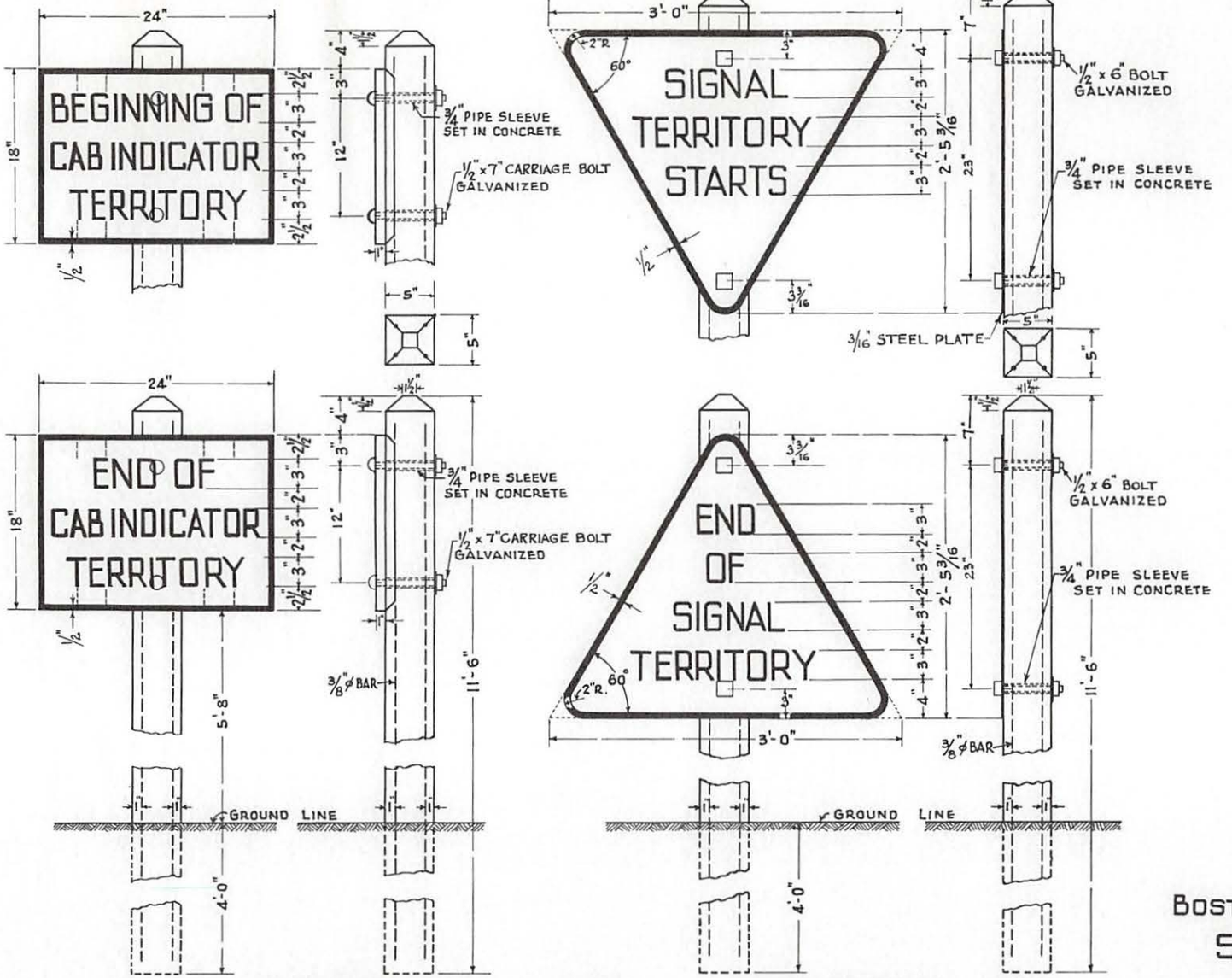
Approved

F. F. Fisher
Engineer M. of W.

Chief Engineer

PLAN	
DRAWN	C.H.B
CHECKED	
CORRECT	
ISSUE	DATE
A	11-4-52

K24



CAB INDICATOR TERRITORY SIGNS

SPECIFICATIONS

POST: CONCRETE: 3500# CLASS.
REINFORCING BARS 3/8" ø, 11'-2" LONG WITH #10 WIRE FOR SPACING.
SIGN: 1" WHITE PINE WITH CLEATS.
PAINTING: WHITE WITH BLACK LETTERING AND BORDER.
EDGES AND BACK TO BE BLACK
LOCATION: 11'-6" FROM CENTER OF TRACK

SIGNAL TERRITORY SIGNS

SPECIFICATIONS

POST: CONCRETE: 3500# CLASS.
REINFORCING BARS 3/8" ø, 11'-2" LONG WITH #10 WIRE FOR SPACING.
SIGN: 3/16" STEEL PLATE
PUNCHED FOR 1/2" BOLTS.
PAINTING: WHITE WITH BLACK LETTERING AND BORDER.
EDGES AND BACK TO BE BLACK.
LOCATION: 11'-6" FROM CENTER OF TRACK.

BOSTON & MAINE R.R.

STANDARD SIGNS

CAB INDICATOR TERRITORY SIGNS
SIGNAL TERRITORY SIGNS

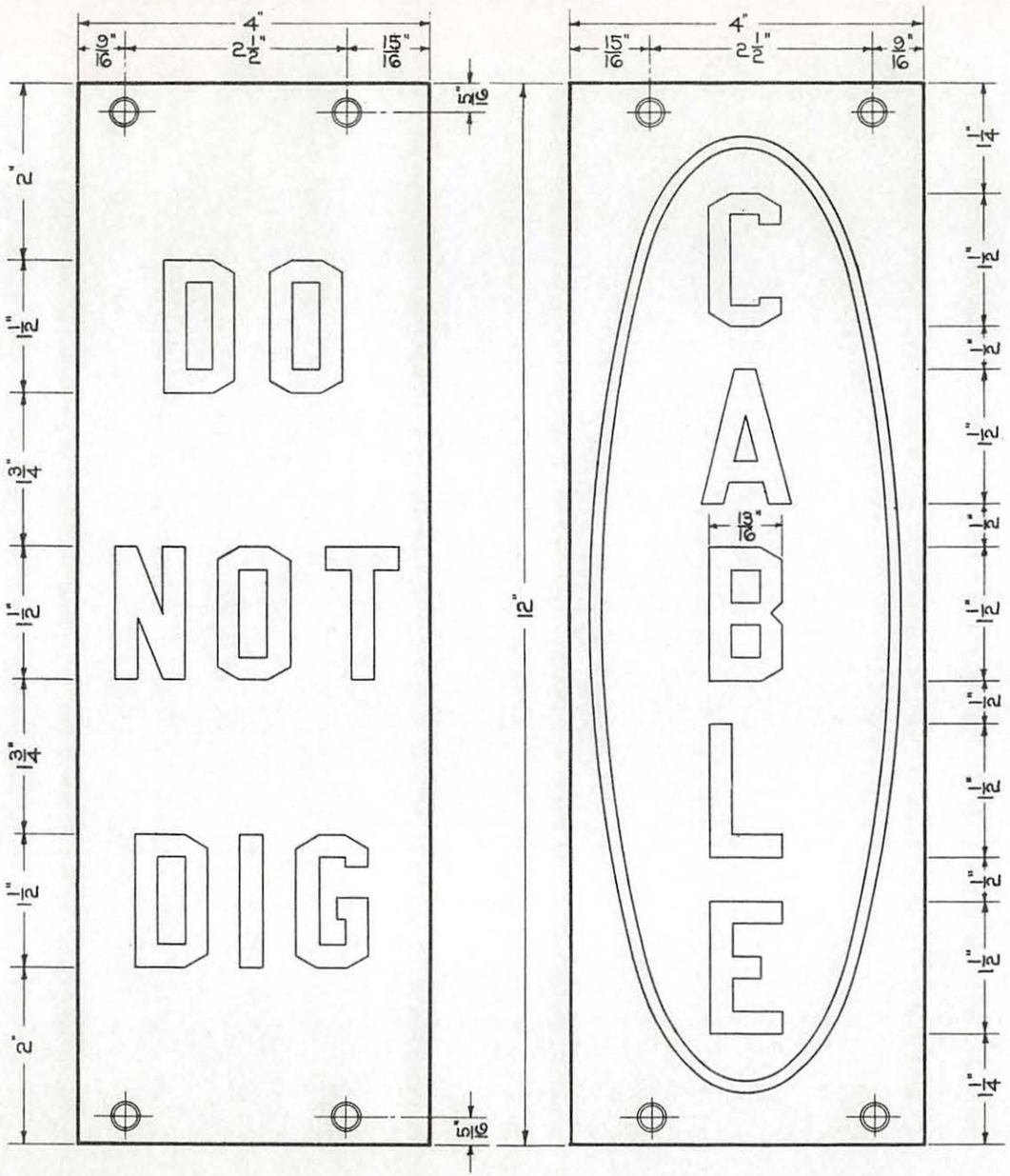
APPROVED:

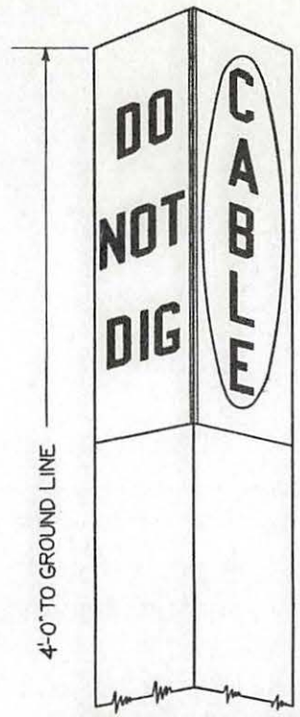
E. N. Fox
ENGINEER OF SIGNALS AND TELEGRAPH

S. J. Phillips
CHIEF ENGINEER

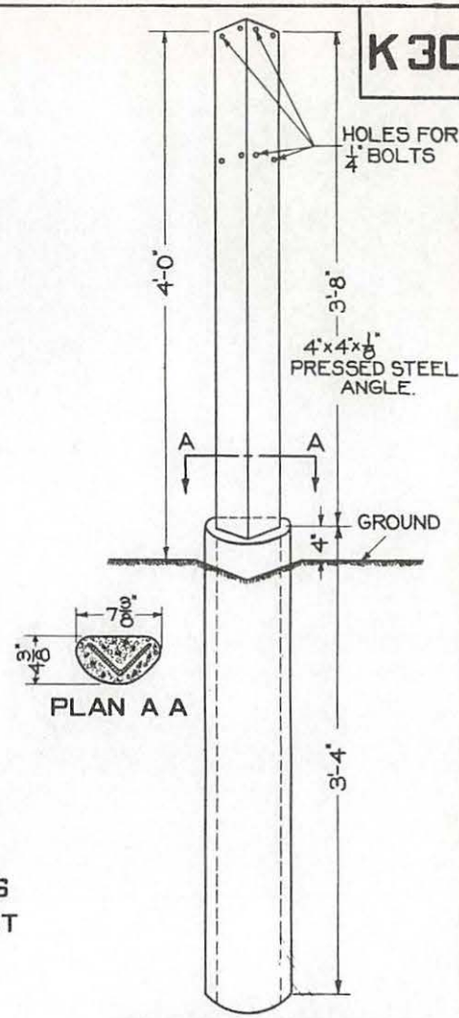
PLAN	
DRAWN E.R.M.	
CHECKED E.F.B.	
CORRECT J.J.R.	
ISSUE	DATE
A	2-11-31

K30

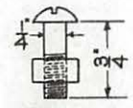




LOCATION OF SIGNS
ON ANGLE IRON POST



SIGN POST DETAIL



BOLT

BOSTON AND MAINE R. R.

STANDARD
CABLE WARNING SIGN

NOTES

SIGNS TO BE MADE OF #18 GAGE STEEL AND HAVE PORCELAIN ENAMEL FINISH.
COLORS- WORDS "DO NOT DIG" BLACK. BALANCE OF SIGN WHITE. WORD CABLE BLACK ON YELLOW OVAL. LINE AROUND OVAL BLACK. BALANCE OF SIGN WHITE.
POST- 4"x4"x⅛" PRESSED STEEL ANGLE IRON, GALVANIZED & SET IN CONCRETE FOOTING.
BOLTS- SIGN BOLTS ¼" x ¾" AS SHOWN, TO BE BRONZE OR BRASS.

APPROVED

E. F. Fiske
ENGINEER B. M. OF W.

CHIEF ENGINEER

PLAN	
DRAW BY - E. R. K. -	
CHECKED C.H.B. -	
CORRECT C.H.B. -	
ISSUE	DATE.
A	6-19-58

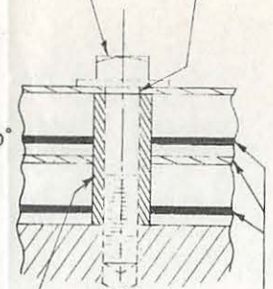
K52

DISTANCES MAY BE INCREASED 2'-0" TO MEET SPECIAL HIGHWAY TRAFFIC CONDITIONS.

FRONT

3/8"-16 SQ. HD. BOLTS 2" LONG WITH WASHERS - 2 REQ'D.

TWO HOLES IN FACE OF FRONT CROSSBUCK BLADE "X" DRILL (.3970) SEE DETAIL OF FASTENING.



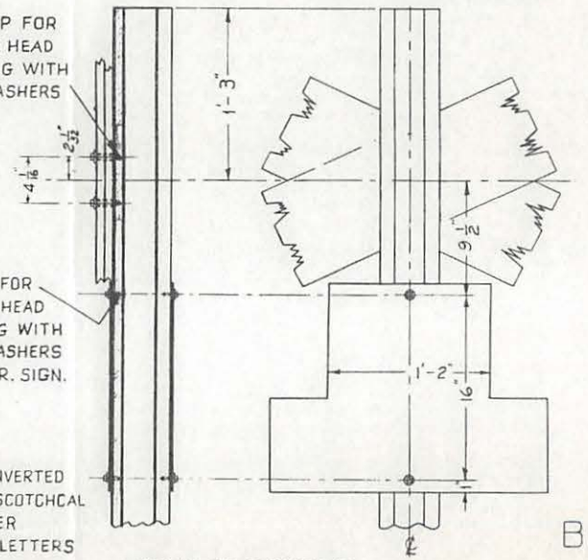
SECTION FULL SIZE OF ATTACHING CROSSBUCK BLADES

ALUMINUM SPACER 5/8" O.D. X 3/8" I.D. X 1 13/32 -.000/-.032 LONG (2) REQ'D.

BACK

21/32" DRILL THRU. .064 INSERTS ℄ FACE OF REAR CROSSBUCK BLADE

DRILL AND TAP FOR 3/8"-16 SQUARE HEAD BOLTS 2" LONG WITH ALUMINUM WASHERS (2) HOLES.



DETAIL OF FASTENING

DRILL AND TAP FOR ¼"-20 SQUARE HEAD BOLTS ½" LONG WITH ALUMINUM WASHERS (2) HOLES PER. SIGN.

SURFACE OF HIGHWAY

16'-9"

10'-0"

5'-6"

PAINT BOTTOM SIX FEET WITH BITUMASTIC No.50

USE .081 ALUMINUM FOR INVERTED "T" SIGN 605 BLACK SCOTCHCAL BACKGROUND 2270 SILVER SCOTCHLITE SERIES D-4" LETTERS

NOTE:

NUMBER OF SIGNS REQUIRED

MASSACHUSETTS
1 SIGN EACH SIDE OF CROSSING

MAINE
1 SIGN PER CROSSING

VERMONT
1 SIGN PER CROSSING

NEW YORK
2 SIGNS PER CROSSING
(RIGHT HAND SIDE OF EACH APPROACH)

NEW HAMPSHIRE
1 SIGN PER CROSSING IS REQUIRED EXCEPT WHERE GATES ARE MAINTAINED AND FLAGMAN EMPLOYED.

USE 9"x72" KAISER EXTRUDED CROSSBUCKS (DOUBLE FACE) 2270 SILVER SCOTCHLITE BACKGROUND SERIES D 5½" LETTERS LETTERS TO BE 605 BLACK SCOTCHCAL

NOTE:

WHERE ONE SIGN PER CROSSING IS REQUIRED, THE BLADES OF THE CROSSBUCK SHOULD BE LETTERED ON BOTH SIDES AND TWO (2) INVERTED "Ts" SHOULD BE USED.

WHERE TWO (2) SIGNS PER CROSSING ARE REQUIRED, THE BLADES OF THE CROSSBUCK SHOULD BE LETTERED ON ONE SIDE ONLY AND ONLY ONE INVERTED "T" IS NECESSARY PER SIGN.

THE INVERTED "T" IS TO BE USED ONLY AT MULTIPLE TRACK CROSSING.

BOSTON & MAINE R.R.

STANDARD

HIGHWAY CROSSING SIGN

MAINE — VERMONT — NEW HAMPSHIRE
MASSACHUSETTS —— NEW YORK

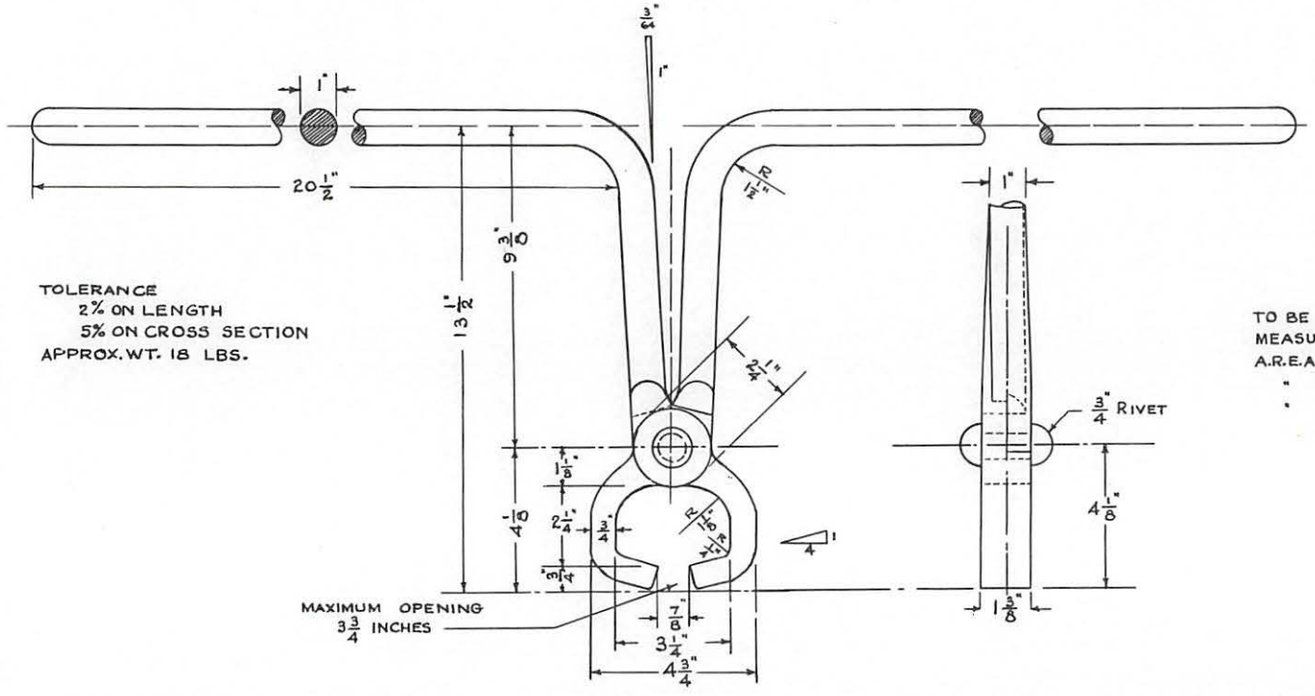
ENGINEER M. OF W.

VICE PRESIDENT ENGINEERING

PLAN	
DRAWN BY C.H.B.	
CHECKED:	
CORRECT:	
ISSUE	DATE
A	6-10-30
B	12-1-43
C	1-31-53

B-Rail Tongs as adopted by A.R.E.A.
C-Eliminated Tie Tongs

M5



TO BE MADE OF OPEN HEARTH STEEL
MEASUREMENTS AS PER PLAN
A.R.E.A. GENERAL SPECIFICATIONS
" SPEC. CHEMICAL AND HARDNESS
" INSPECTION AND PHYSICAL TESTS

BOSTON & MAINE R.R.
STANDARD
RAIL TONGS

APPROVED

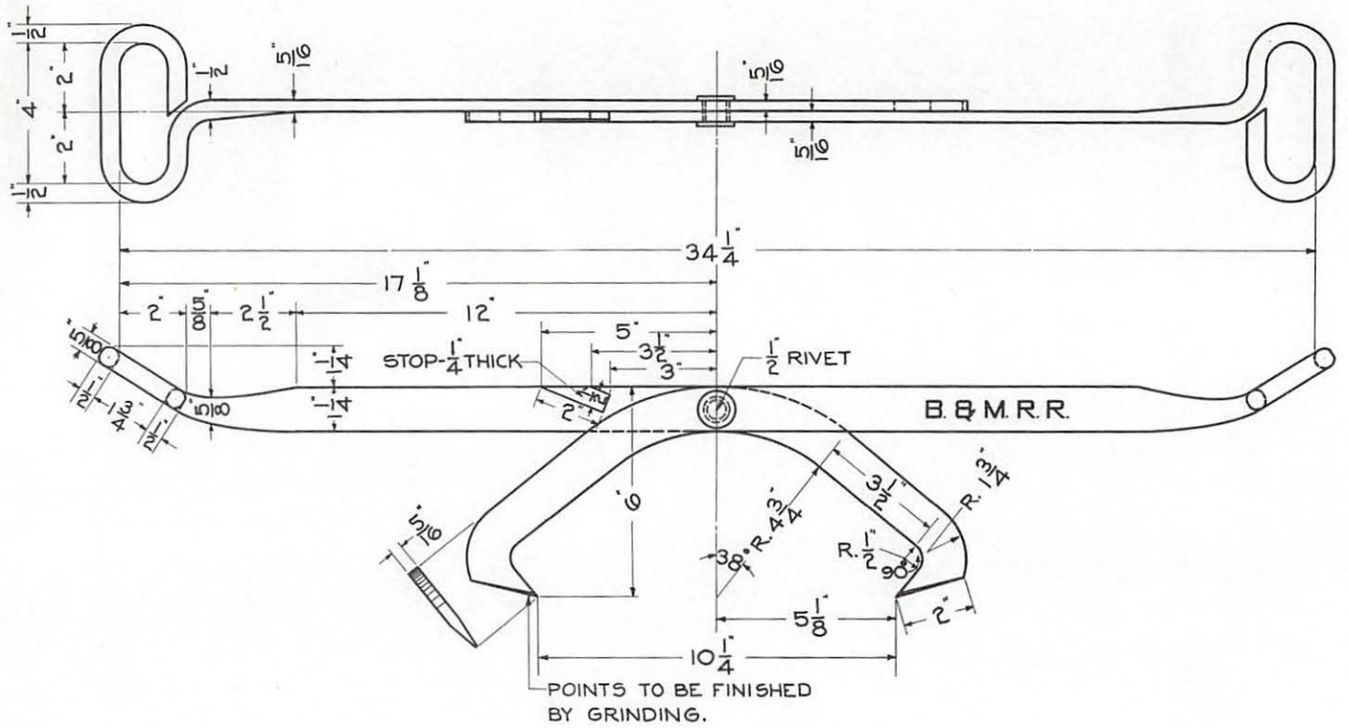
ENGINEER M. OF W.

CHIEF ENGINEER

DRAWN: A.S.M.
CHECKED: E.R.M.
CORRECT: J.J.R.

ISSUE	DATE
A	1-31-53

M 6
A



TOLERANCE
2% ON LENGTH
5% ON CROSS SECTION

SPECIFICATIONS

TO BE MADE OF OPEN HEARTH STEEL.
MEASUREMENTS AS PER PLAN.
A.R.E.A. GENERAL SPECIFICATIONS.
" SPEC. CHEMICAL AND HARDNESS.
" INSPECTION AND PHYSICAL TESTS.

BOSTON AND MAINE R. R.

STANDARD
TIE UNLOADING
AND
CARRYING TONGS

APPROVED

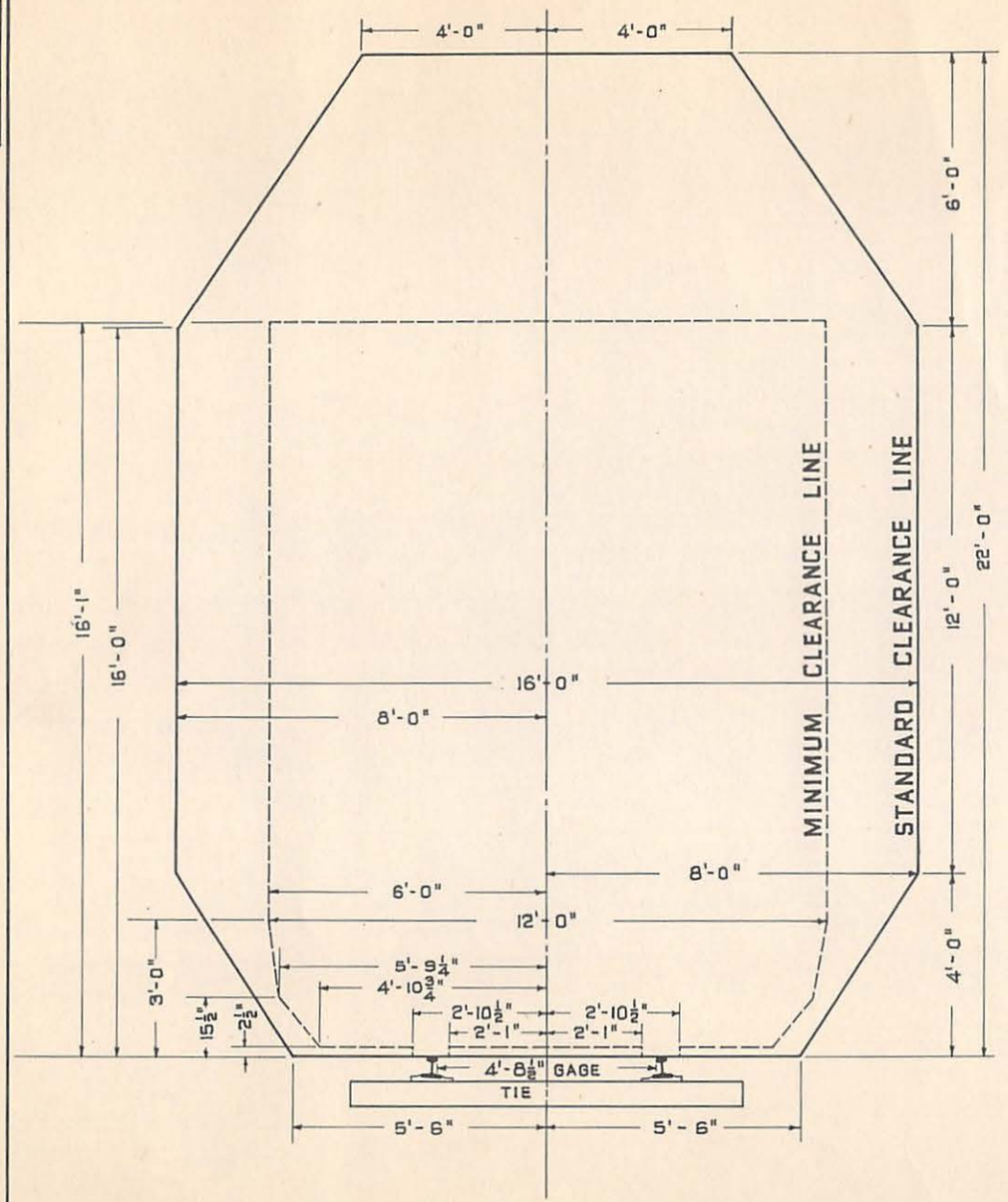
ENGINEER M. OF W.

CHIEF ENGINEER

PLAN	
DRAWN	R B H
CHECKED	E M H
CORRECT	F W H

ISSUE	DATE
A	3-22-43

N I



CLEARANCE NOTES

THE CLEARANCES SHOWN ARE TO BE USED FOR ALL NEW WORK AND WHERE POSSIBLE IN REMODELING EXISTING STRUCTURES. NO OBSTRUCTIONS OF ANY KIND WHATSOEVER, SHALL BE PERMITTED WITHIN THE STANDARD CLEARANCE LINE, UNLESS EXPRESSLY APPROVED BY THE CHIEF ENGINEER.
CLEARANCES SHOWN ARE FOR TANGENT TRACK.

ADDITIONAL CLEARANCES REQUIRED ON CURVES

USED BY PASSENGER EQUIPMENT - INCREASE SIDE CLEARANCES 1" ON EACH SIDE AND 2" BETWEEN TRACKS FOR EACH DEGREE OF CURVATURE.

USED BY FREIGHT EQUIPMENT ONLY - INCREASE SIDE CLEARANCES $\frac{3}{8}$" ON EACH SIDE AND $1\frac{1}{2}$" BETWEEN TRACKS FOR EACH DEGREE OF CURVATURE.

SUPERELEVATED CURVES ADDITIONAL SIDE CLEARANCES

TO BE ADDED TO CURVE CLEARANCES ON INSIDE OF CURVES ONLY

ELEVATION OUTER RAIL	DISTANCES UP FROM TOP OF LOW RAIL												
	4'	5'	6'	7'	8'	9'	10'	11'	12'	13'	14'	15'	16'
1"	1"	1"	1"	1"	2"	2"	2"	2"	2"	3"	3"	3"	3"
2"	2"	2"	2"	3"	3"	4"	4"	4"	5"	5"	6"	6"	6"
3"	2"	3"	4"	4"	5"	5"	6"	7"	7"	8"	9"	9"	10"
4"	3"	4"	5"	6"	7"	7"	8"	9"	10"	11"	11"	12"	13"
5"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"
6"	5"	6"	7"	9"	10"	11"	12"	13"	15"	16"	17"	18"	19"

STANDARD TRACK CENTERS

MAIN TRACKS ON TANGENT	13'-0"
MAIN LINE OR PASSING TRACKS AND LADDER TRACKS	16'-0"
DOUBLE LADDER TRACKS	18'-0"
REPAIR TRACKS	18'-0"
LOCAL STORAGE TRACKS	14'-0"
THROUGH TRAIN STORAGE TRACKS	16'-0"-20'-0"
SEMAPHORE SIGNALS WHERE POLES ARE LOCATED BETWEEN TRACKS	16'-10" 17' 6"
WATER COLUMNS 10" AND 12"	18' 0"
COLOR LIGHT SIGNALS ON MAST OR CASE	19'-7"
APPROACH SIGNAL	20'-8"

STANDARD SIDE CLEARANCES FROM CENTER LINE OF TANGENT TRACK

ABUTMENTS	8'-0"
BRIDGE GUARD POLES	8'-6"
MILE POSTS	17'-6"
MAIL CRANES, HANGERS	6'-6"
RETAINING WALLS	10'-0"
SECTION HOUSES	17'-0"
SIGNAL BRIDGES MIN.	8'-7"
SIGNAL TOWERS	12'-0"
SIGNS (ROADWAY) SEE STD. PLANS	
TEL. AND TEL. POLES	25'-0"
TIES, LUMBER AND OTHER MATERIALS MIN.	10'-0"

BOSTON AND MAINE R. R.
STANDARD
CLEARANCE DIAGRAM

ENGINEER SIGNALS AND TELEGRAPH

ENGINEER OF STRUCTURES

ENGINEER M. OF W.

CHIEF ENGINEER

PLAN	
DRAWN	R B H
CHECKED	E M H
CORRECT	F W H

ISSUE	DATE
A	3-22-43
B	11-1-49
C	11-7-55

B - OVERHEAD WIRE & CABLE CLEARANCE CHANGED.

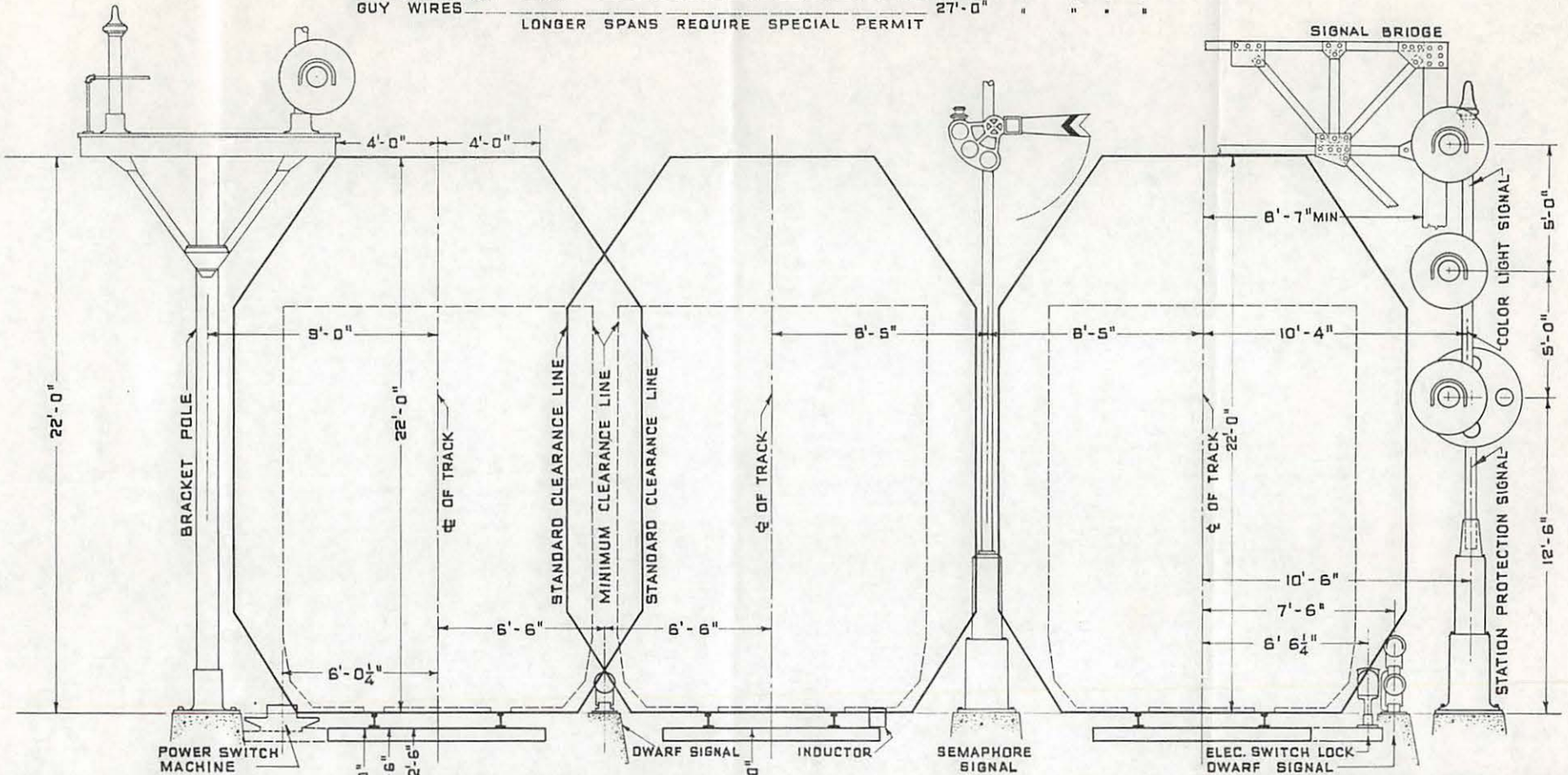
C - CHANGED TEL. BOX CLEARANCE TO 12'-0" TO AGREE WITH G-30

N3

OVERHEAD WIRE AND CABLE CLEARANCE FOR MAXIMUM LENGTH SPAN OF 175 FEET

ELECTRIC SUPPLY LINES	ABOVE 50 000	VOLTS	REQUIRES SPECIAL PERMIT
ELECTRIC SUPPLY LINES	15 000 TO 50 000	"	30'-0" ABOVE TOP OF RAIL
ELECTRIC SUPPLY LINES	750 TO 15 000	"	28'-0" " " " "
ELECTRIC SUPPLY LINES	UP TO 750	VOLTS	27'-0" ABOVE TOP OF RAIL
COMMUNICATION LINES			27'-0" " " " "
GUY WIRES			27'-0" " " " "

LONGER SPANS REQUIRE SPECIAL PERMIT



UNDERGROUND ELECTRIC WIRE AND CABLE CLEARANCES

4'-0" SUPPLY LINES

3'-6" 2'-6" R.R. SIGNAL LINES 220 VOLTS MAX. COMMUNICATION LINES

COVER WITH 2 INCH CREOSOTED PLANKING WHEN NOT PROTECTED BY CONCRETE DUCT OR STEEL CONDUIT

4'-0" MINIMUM 2'-6" BELOW TOP OF TIE MUST BE PROTECTED IF LESS THAN 6" BELOW STONE BALLAST

CONDUIT

CONCRETE OR OTHER PROTECTIVE COVERING

CONDUIT CROSSING

DWARF SIGNAL — WHEN USED BETWEEN TRACKS LESS THAN 13' CTRS
1 UNIT SIGNAL - TOP OF FOUNDATION AT BASE OF RAIL
2 UNIT SIGNAL - REQUIRES APPROVAL OF CHIEF ENG'R

CLEARANCE NOTES

THE CLEARANCES SHOWN ARE FOR TANGENT TRACKS. ADDITIONAL CLEARANCES MUST BE ALLOWED ON CURVES AND WHEN OUTER RAIL OF TRACK IS ELEVATED. SEE STANDARD PLAN N1 FOR THESE ADDITIONAL CLEARANCES.

STANDARD SIDE CLEARANCES FROM CENTER LINE OF TANGENT TRACK

BATTERY BOXES	10' - 4"
RELAY BUNGALOW	10' - 6"
TRUNKING LINES	10' - 4"
TELEPHONE BOXES	12' - 0
AUTOMATIC HIGHWAY CROSSING SIGNAL — MIN.	8' - 0"

BOSTON AND MAINE R.R.

STANDARD CLEARANCE DIAGRAM

SIGNAL AND ELECTRICAL STRUCTURES

E. M. Fox
ENGINEER OF SIGNALS AND TELEGRAPH

H. S. Ashley
ENGINEER M. OF W.

R. W. Brodie
ENGINEER OF STRUCTURES

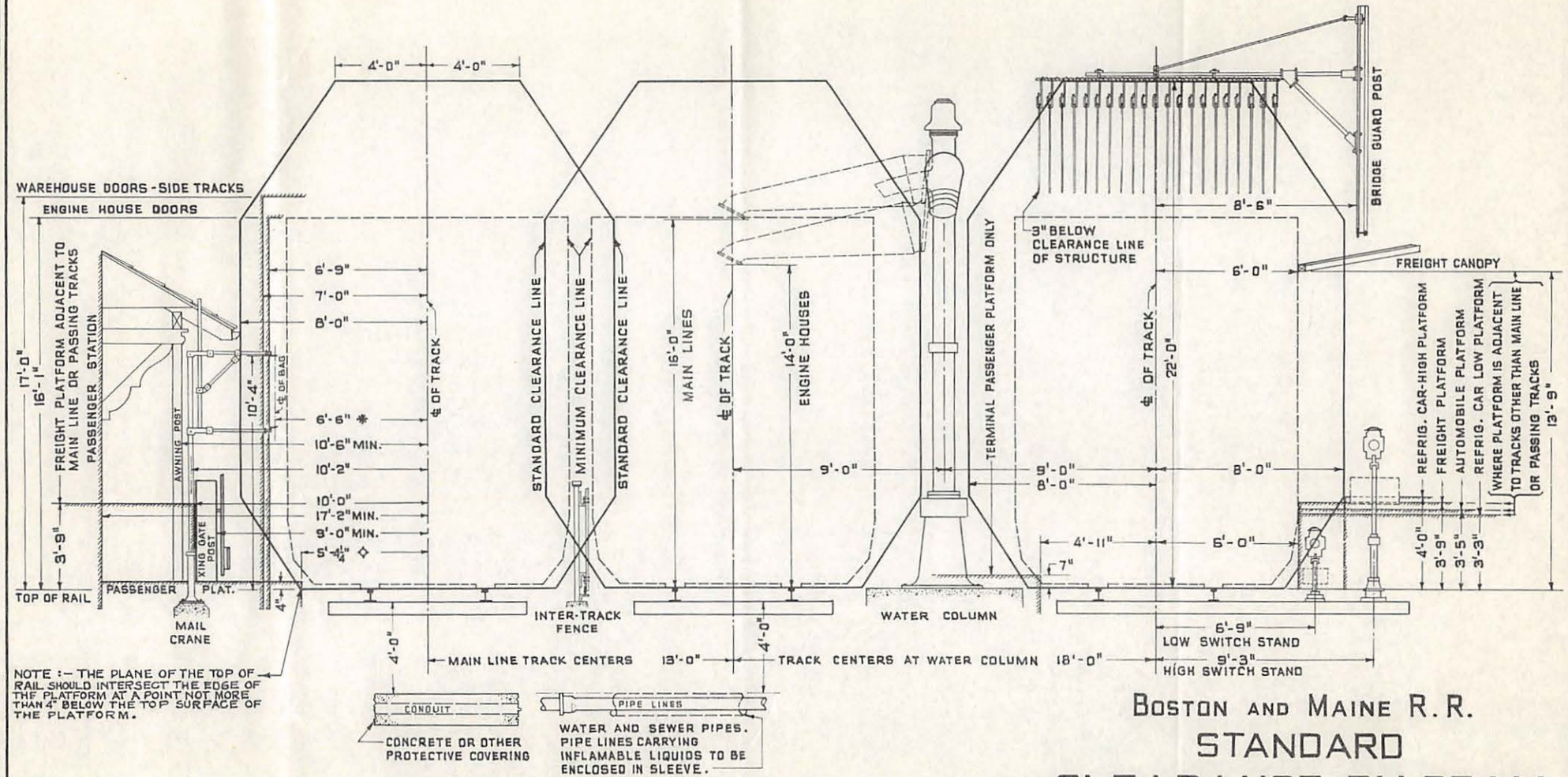
S. J. Child
CHIEF ENGINEER

PLAN	
DRAWN	RBH
CHECKED	EMH
CORRECT	FWH

ISSUE	DATE
A	3-22-43
B	4-5-55

B-ADDED NOTE ON PLATFORM CLEARANCE

N2



CONDUIT OR PIPE LINE CROSSING

CLEARANCE NOTES

THE CLEARANCES SHOWN ARE FOR TANGENT TRACK. ADDITIONAL CLEARANCES MUST BE ALLOWED ON CURVES AND WHEN OUTER RAIL OF TRACK IS ELEVATED (◆ EXCEPT WHERE NOTED) SEE STANDARD PLAN-N 1 FOR THESE ADDITIONAL CLEARANCES.

◇ PASSENGER PLATFORMS - ADDITIONAL CLEARANCES REQUIRED ONLY ON 5°-0' CURVES OR OVER.

* MAIL CRANES - SPECIAL SETTING FOR CLEARANCES REQUIRED ON CURVES.

BOSTON AND MAINE R.R.

STANDARD CLEARANCE DIAGRAM

M. OF W. STRUCTURES

E. N. Fox
ENGINEER SIGNALS AND TELEGRAPH

H. S. Ashley
ENGINEER M. OF W.

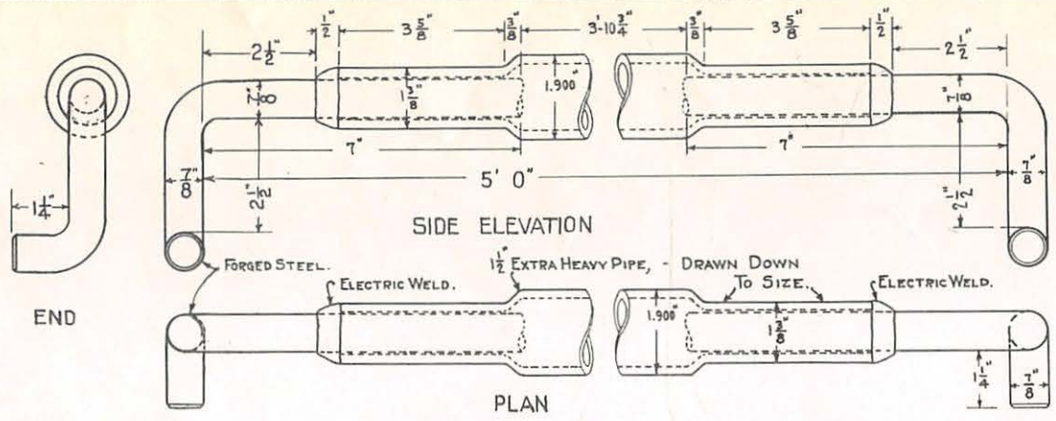
ENGINEER OF STRUCTURES

CHIEF ENGINEER

PLAN	
DRAWN C.L.F	
CHECKED H.D.D.	
CORRECT J.J.R.	
ISSUE	DATE
A	2-15-34
B	5-19-50

B= DESIGN ALTERED

05



MOTOR CAR COUPLER

NOTES:-

MATERIAL;- FORGED STEEL ENDS.
EXTRA HEAVY W.I. PIPE - CENTER SECTION.
WEIGHT;- 17 LBS.
USE;- WITH M. OF W. MOTOR CARS AND TRAILERS.

BOSTON AND MAINE R.R.

STANDARD

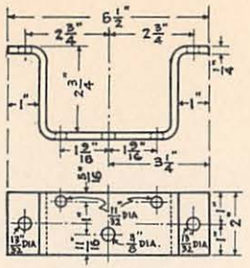
MOTOR CAR

COUPLER

W.F. Tyrrell
ENGINEER M. OF W.

S.H. Wilson
CHIEF ENGINEER

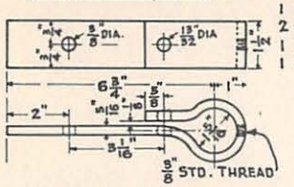
PLAN	
DRAWN H.A.R.	
CHECKED C.L.F	
CORRECT J.J.R	
ISSUE	DATE
A	3-4-35



BRACKET TYPE 1

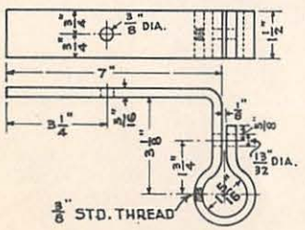
BILL OF MATERIAL
TYPE 1 BRACKET & HOLDER
TO FIT MOTOR CARS
LISTED BELOW

EACH ASSEMBLY REQUIRES
1 5/8"×1" CUP POINT SET SCREW
1 5/8"×1½" MACH. BOLT
1 5/16×1½" " "
1 3/8×2" " " DRILLED FOR 3/32" COTTER
1 5/16" HEX. NUT
4 3/8" " "
1 3/8" CASTLE NUT
3 3/8" LOCK WASHERS
1 5/16" " "
2 3/8" FLAT WASHER
1 3/32"×1" COTTER
1 200LB. COMPRESSION SPRING



HOLDER TYPE 1

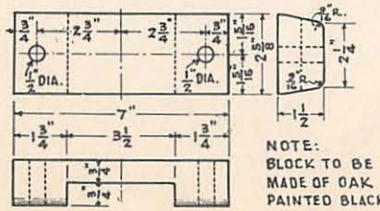
BRACKET TYPE 2-R.H.
LEFT HAND SAME EXCEPT OPPOSITE HAND



HOLDER TYPE 2

BILL OF MATERIAL
TYPE 2 BRACKET & HOLDER
TO FIT MOTOR CARS
LISTED BELOW

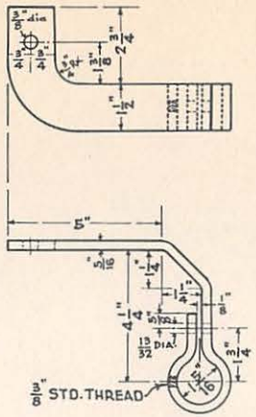
EACH ASSEMBLY REQUIRES
1 5/8"×1" CAP SCREW
1 5/8"×1" CUP POINT SET SCREW
1 5/8"×1½" MACH. BOLT
1 5/8×2 " " DRILLED FOR 3/32" COTTER
2 5/8" HEX. NUTS
1 5/8" CASTLE NUT
2 5/8" LOCK WASHER
2 5/8" FLAT WASHER
1 3/32×1 COTTER
1 200 LB. COMPRESSION SPRING



WOOD FILLER CHANNEL BLOCK
TYPE 1-A

NOTE:
BLOCK TO BE MADE OF OAK PAINTED BLACK.

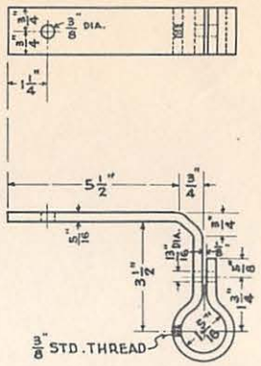
NOTES:
ALL PARTS TO BE PAINTED BLACK.



HOLDER TYPE 3-R.H.
LEFT HAND SAME EXCEPT OPPOSITE HAND

BILL OF MATERIAL
TYPE 3 HOLDER
TO FIT MOTOR CARS
LISTED BELOW

EACH HOLDER REQUIRES
1 5/8"×1" CUP POINT SET SCREW
1 5/8×1½" MACH. BOLT
1 5/8"×3" MACH. BOLT, DRILLED FOR 3/32" COTTER
2 5/8" HEX. NUTS
1 5/8" CASTLE NUT
1 5/8" LOCK WASHER
2 5/8" FLAT WASHER
1 7/16" WASHER-1/16 THICK-2" OUTSIDE
1 3/32×1" COTTER
1 200LB. COMPRESSION SPRING

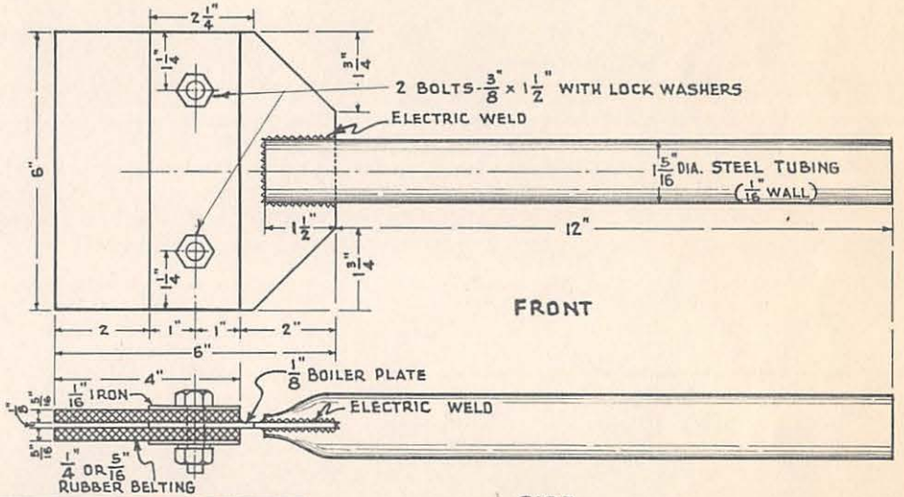


HOLDER TYPE 4

BILL OF MATERIAL
TYPE 4 HOLDER
FAIRMONT C.M.-19 MOTOR CARS

EACH HOLDER REQUIRES
1 5/8"×1" CUP POINT SET SCREW
1 5/8"×1½" MACH. BOLT
1 5/8"×2" " " DRILLED FOR 3/32" COTTER
2 5/8" HEX. NUTS
1 5/8" CASTLE NUT
1 5/8" LOCK WASHER
2 5/8" FLAT WASHER
1 3/32×1" COTTER
1 200 LB. COMPRESSION SPRING

COMPRESSION SPRING
200 LB.



SIDE RAIL SWEEP

MOTOR CARS	BRACKET TYPE	HOLDER TYPE	FILLER BLOCK TYPE	EXTRA BOLTS TO ATTACH BRACKET NO	DIA.	LGTH.
FAIRMONT 59	1	1		2	5/8	2½"
" AM9	2-R&L	2				
" BM19		3-R&L				
" CM19		4				
" AM14	1	1		2	5/8	2½"
" CS 2	1	1		2	5/8	2½"
" DS 2	1	1	1A	2	5/8	2½"
" M 2	1	1		2	5/8	2½"
" A 2	1	1		2	5/8	2½"
" A 4	1	1		2	5/8	2½"
" A 6	1	1	1A	2	5/8	2½"
FAIRBANKS MORSE 40	1	1		2	5/8	1¼"
" 40B	1	1		2	5/8	1¼"
" 41		3-R&L				
" 44	1	1		2	5/8	1¼"
" 45	1	1		2	5/8	1¼"
" 701	1	1		2	5/8	1¼"
" 702	1	1		2	5/8	1¼"
CASEY JONES 532	2-R&L	1		2	5/8	1¼"
" 551	1	1		2	5/8	1¼"
KALAMAZOO 35B	1	1		2	5/8	1¼"

BOSTON AND MAINE R.R.

STANDARD
RAIL SWEEP FOR TRACK MOTOR CARS

APPROVED

H. J. Fifield
ENGINEER M. OF W.

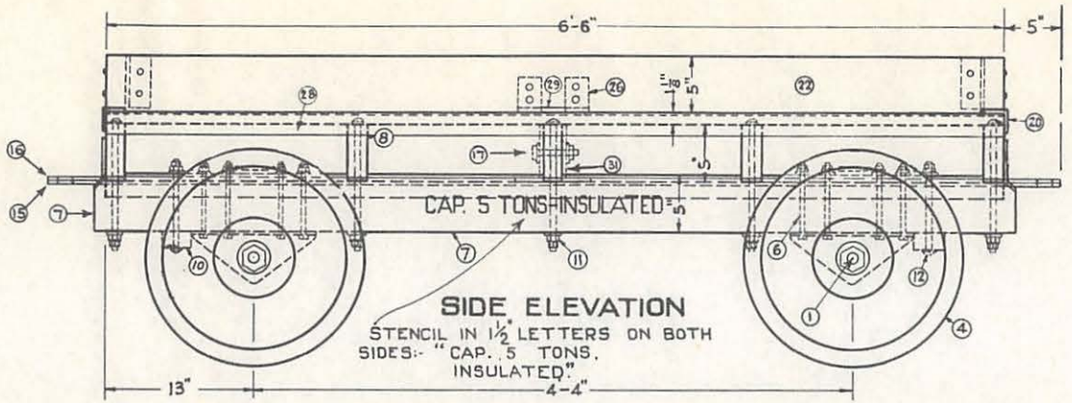
W. J. Backes
CHIEF ENGINEER
W.J.B.

PLAN	
DRAWN	R.E.B.
CHECK&TR.	H.A.R.
CORRECT	J.J.R.

ISSUE	DATE
A	2-8-45
B	8-24-45
C	1-25-50
D	8-13-53

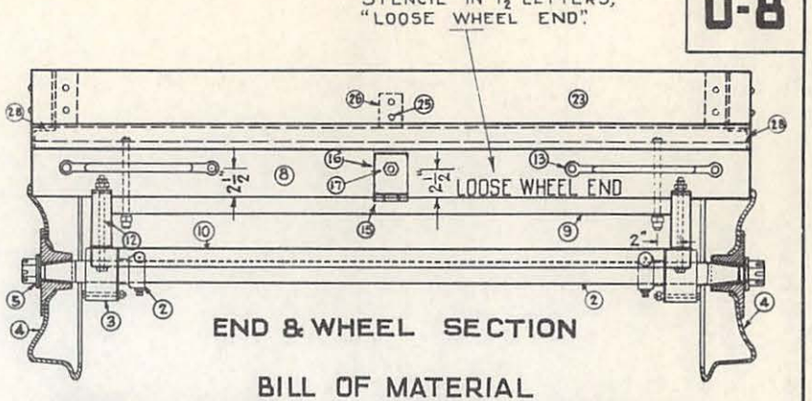
B- General Revisions.
C- General Revision
D- New Drawbar

0-8

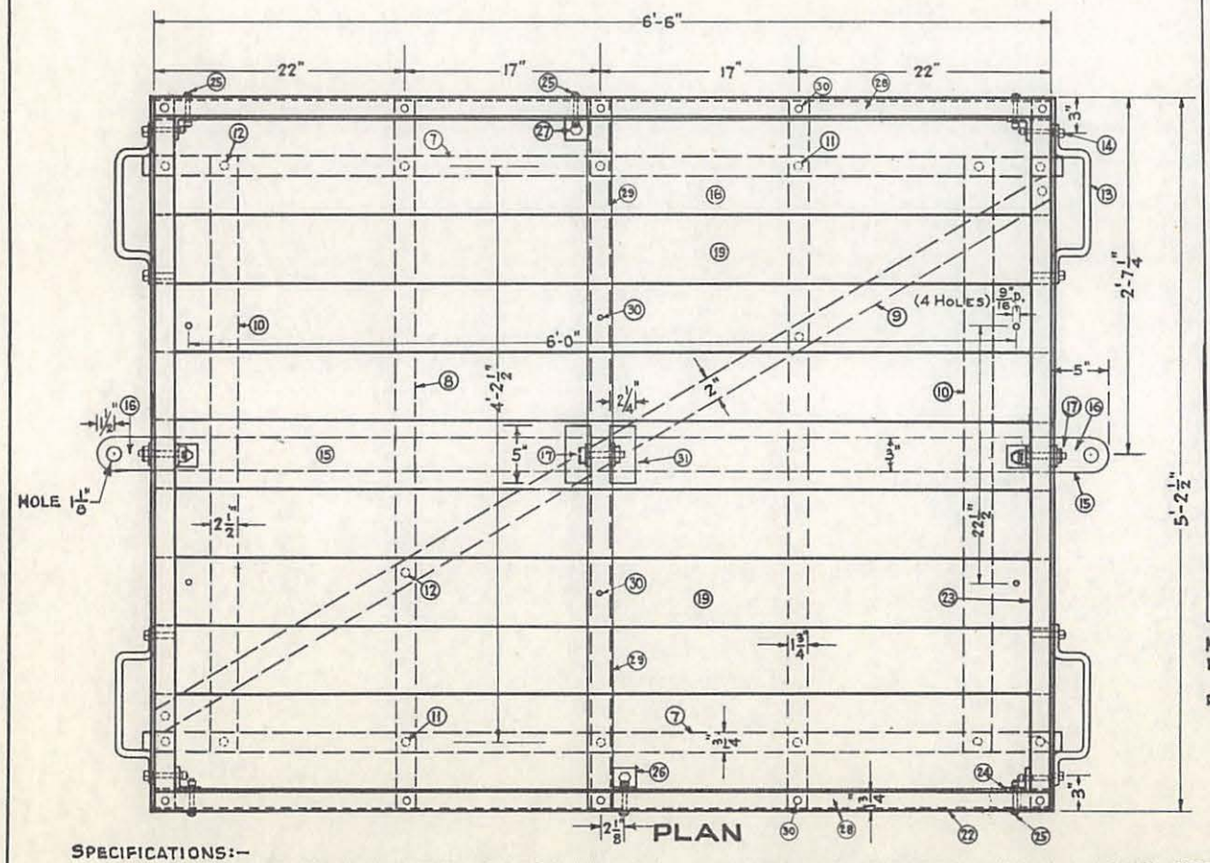


SIDE ELEVATION

STENCIL IN 1½" LETTERS ON BOTH SIDES:- "CAP. 5 TONS. INSULATED."



END & WHEEL SECTION



PLAN

BILL OF MATERIAL

PART NO.	QUANTITY	MATERIAL
1	1	1⅞" S.A.E. 1045 STEEL AXLE (SOLID) WITH THRUST COLLARS & END NUTS.
2	1	1⅞" S.A.E. 1045 DIFFERENTIAL AXLE WITH THRUST COLLARS & END NUTS.
3	4	TIMKEN BEARING AXLE BOX INCL. BOX, BEARINGS, COVER PLATES AND SHIMS.
4	4	16" DIA. × 5/16" PLATE WHEELS WITH TAPER BORE FOR INSULATION
5	4	SETS 1⅞" AXLE INSULATION-COMPLETE INCL. BUSHINGS-FIBRE WASHERS-STEEL WASHERS
6	16	⅜" × 6" MACHINE BOLTS WITH 2 NUTS EACH AND FLAT WASHERS.
7	2	1¾" × 5" × 6'-8" LONG CLEAR DRY WHITE OAK TIMBER
8	5	1¾" × 5" × 5'-2½" " " "
9	1	1½" × 2" × 7'-8" " " "
10	2	1½" × 2½" × 4'-4¼" " " "
11	10	½" × 11" CARRIAGE BOLTS-EACH WITH SQUARE GRIP WASHER, PLATE WASHER AND 2 NUTS.
12	8	½" × 8" CARRIAGE BOLTS-EACH WITH SQUARE GRIP WASHER, PLATE WASHER AND 2 NUTS.

PART NO.	QUANTITY	MATERIAL
13	4	STD. PUSH CAR HAND IRONS
14	8	½" × 3½" SQUARE HEAD BOLTS - EACH WITH FLAT WASHER AND 2 NUTS.
15	1	3" STANDARD DRAWBAR 1⅛" HOLES 7'-4" × 3" × ¼"
16	2	4" × 5" × ¼" × 3" LONG ANGLE IRON SHAPED TO AND WELDED TO TOP OF DRAWBAR
17	3	⅝" × 3½" SQUARE HEAD BOLTS WITH LOCK WASHERS AND NUTS
18	2	1⅛" × 10¼" × 6'-6" LONG OAK BOARDS (RABBET EDGE)
19	7	1⅛" × 6" × 6'-6" " SPRUCE BOARDS
	½ LB	6-D WIRE NAILS
20	2	2" × 2" × ¼" × 5'-2½" LONG ANGLE IRON.
21	2	2" × 2" × ¼" × 6'-6" " " "
22	2	1¾" × 5" × 6'-6" LONG. CLEAR DRY WHITE OAK TIMBER.
23	2	1¾" × 4⅜" × 4'-11" " " "
24	4	2" × 2" × ¼" × 4¾" LONG ANGLE IRON
25	24	5/16" × 2½" CARRIAGE BOLTS WITH NUTS AND LOCK WASHERS.
26	4	2" × 3" × ¼" × 2" LONG ANGLE IRON
27	4	⅜" × 2½" SQUARE HEAD BOLTS WITH WASHERS AND 2 NUTS
28	2	2" × 2" × ¼" × 6'-6" LONG ANGLE IRON.
29	1	2" × ⅛" × 5'-2½" LONG OHS RUBBING STRIP.
30	12	½" × 7½" CARRIAGE BOLTS WITH NUTS
31	2	2¼" × 5" × ¼" × 5" LONG ANGLE IRON

NOTE:
PUSH CAR PARTS- NO. 1 TO 21 & NO. 28 TO 30.
REMOVABLE TRAY PARTS- NO. 22 TO 27.

SPECIFICATIONS:-
ALL SILLS, CROSS BRACES AND DIAGONAL BRACES TO BE CLEAR DRY WHITE OAK.
ALL SILLS TO BE GAINED ONE QUARTER OF AN INCH.
DECK TO BE OF SPRUCE.
SQUARE GRIP WASHERS TO BE USED WITH ALL CARRIAGE BOLTS.
ALL BOLTS MUST BE DOUBLE NUTTED WHEN USED WITH FLAT WASHERS, AND EQUIPPED WITH LOCK WASHERS WHEN NUT IS AGAINST METAL.
DECK BOARDS TO BE COUNTERSUNK WHEN LAID ON HEADS OF CARRIAGE BOLTS.
WOOD SCREW HOLES IN ANGLE IRON TO BE COUNTERSUNK.

BOSTON AND MAINE R.R.

STANDARD
5 TON PUSH AND TRAILER CAR
WITH REMOVABLE TRAY

APPROVED

H.F. Fifield
ENGINEER M. OF W

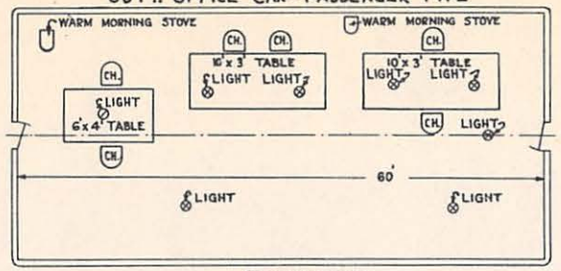
S. Phillips
CHIEF ENGINEER

PLAN	
DRAWN BY F.B.W.	
CHECKED BY H.A.R.	
CORRECT F.W.H	
ISSUE	DATE
B	3-2-49

B = REDRAWN.

021

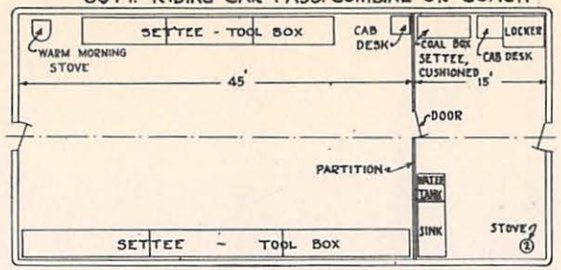
60 Ft. Office Car - Passenger Type



Equipment

No.	Item
2	3' x 10' Tables
1	4' x 6' Table
2	Warm Morning Stoves
6	Chairs
8	Electric Lights

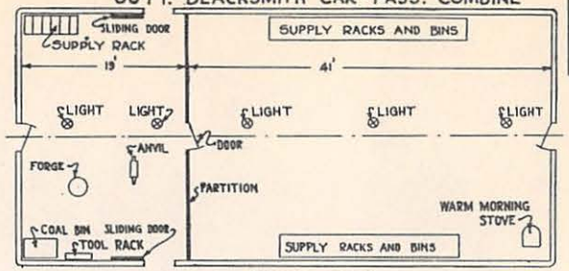
60 Ft. - Riding Car - Pass. Combine or Coach



Equipment

No.	Item	No.	Item
2	Settee-Tool Boxes	1	Coal Box-Settee Cushioned
2	Cab-Desks	1	Warm Morning Stove
1	Locker	4	Kerosene Lamps
1	Sink	1	Water Tank
1	#2 Stove	1	Partition
1	Door		

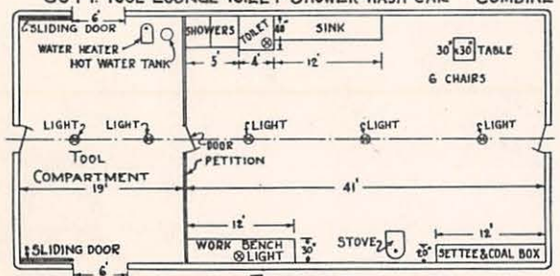
60 Ft. - Blacksmith Car - Pass. Combine



Equipment

No.	Item	No.	Item
1	Tool Rack	2	Supply Racks & Bins
1	Forge	1	Small Supply Rack
1	Anvil	1	Coal Bin (6'x4')
1	Door	1	Warm Morning Stove
1	Partition	5	Electric Lights

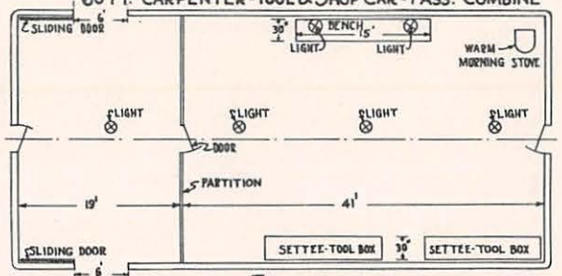
60 Ft. Tool-Lounge-Toilet-Shower-Wash Car - Combine



Equipment

No.	Item	No.	Item
1	#5 Stove	2	Flexible Hose Connections
1	#25 Hot Water Heater	1	Chemical Toilet
1	80 Gal. Hot Water Tank	1	Cushioned Settee-Coal Box
1	12' Sink	1	30"x30" Table
6	Faucets - with Piping	6	Chairs
2	Single Head Showers	1	12'x30" Work Bench
1	Partition and Door	7	Electric Lights

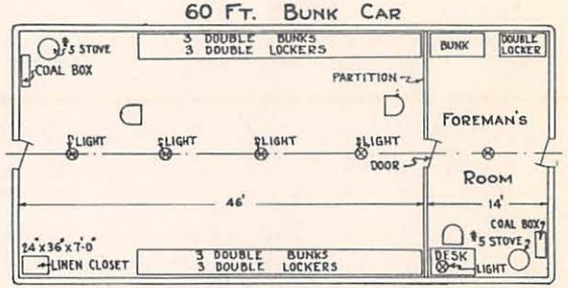
60 Ft. - Carpenter-Tool & Shop Car - Pass. Combine



Equipment

No.	Item	No.	Item
1	Bench - 2'-6" x 15'	2	Settee-Tool Boxes (30" Wide)
1	Door	1	Warm Morning Stove
1	Partition	6	Electric Lights

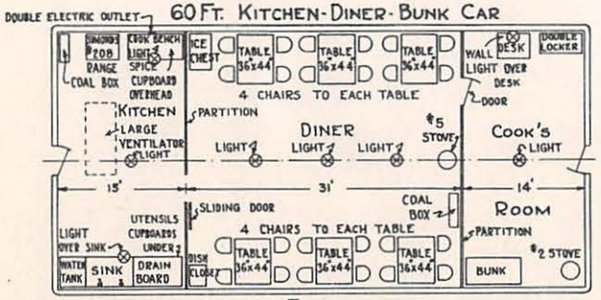
60 Ft. Bunk Car



Equipment

No.	Item	No.	Item
2	#5 Stoves	6	Double Bunks
1	Single Bunk	6	Double Lockers
1	Hinged Door	1	Double Locker
2	Coal Boxes	6	Electric Lights
1	Desk	1	Linen Closet
3	Chairs	2	Roof Ventilators
1	Partition		

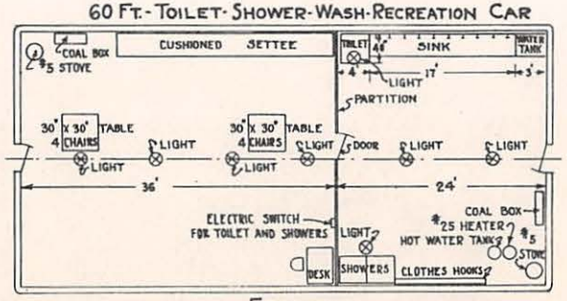
60 Ft. Kitchen-Diner-Bunk Car



Equipment

No.	Item	No.	Item	No.	Item
1	Desk	6	36"x44" Tables	2	Metal Coal Boxes
1	#208 Range	1	Large Ventilator	8	Electric Lights
1	#5 Stove	24	Kitchen Chairs	1	Pan and Utensil Closet
1	#2 Stove	1	Cold Water Tank	1	Cook Bench
1	Sink	1	Dish Closet	2	Faucets - Piping from Faucets to End of Car
1	Drain Board	1	Spice Closet	2	Flexible Hose Connections
1	Ice Chest	1	Hinged Door	1	Double Locker
1	Bunk	1	Sliding Door		
2	Partitions	1	Double Elec. Outlet		

60 Ft. - Toilet-Shower-Wash-Recreation Car



Equipment

No.	Item	No.	Item
2	#5 Stoves	1	#25 Werner Hot Water Heater
1	Cold Water Tank	1	80 Gal. Hot Water Tank
1	Chemical Toilet	10	Faucets - with Piping
8	Electric Lights	2	Flexible Hose Connections
1	17 Ft. Sink	1	Cushioned-Settee Locker
1	Hinged Door	12	Clothes Hooks-Large Size
2	30"x30" Tables	2	Coal Boxes
9	Chairs	2	Single Head Showers
1	Desk	1	Partition
1	Elec. Switch		

NOTES:

Outside Doors and Windows to be Screened.
Interior Painting to be:- White Ceiling,- Green Walls,- Gray Floor and Black Base Boards - Screen Doors and Window Screens.

Boston and Maine Railroad

STANDARD WORK CAR EQUIPMENT

APPROVED:- C L Fox
SUPV. OF WORK EQUIPT.

H J Fifield
ENGINEER M. OF W.

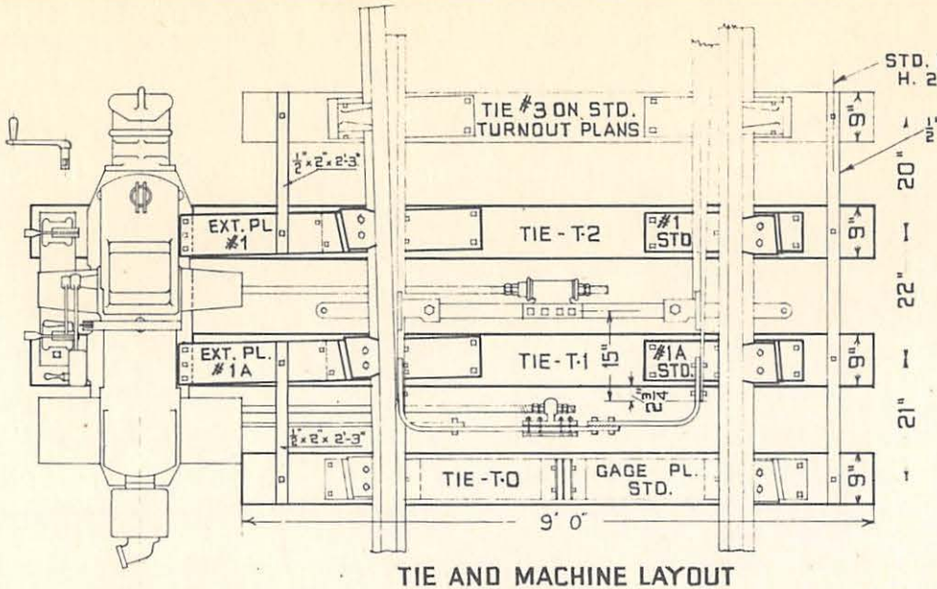
S G Phillips
CHIEF ENGINEER.

PLAN	
DRAWN	J.L.B
CHECKED	R.B.H
CORRECT	J.J.R / A.R.B

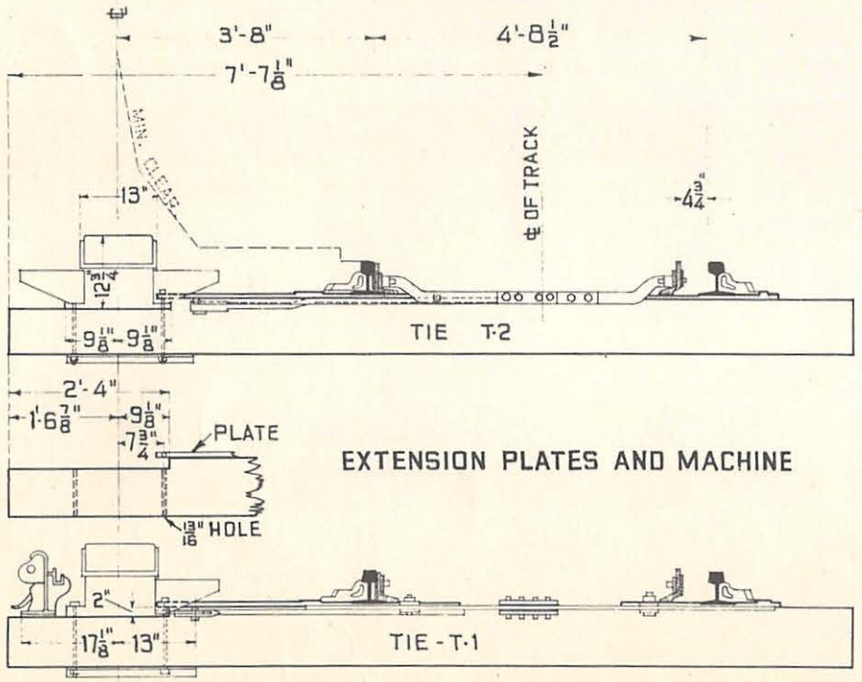
ISSUE	DATE
A	8-1-32
B	5-23-42

B NOTE CHANGE

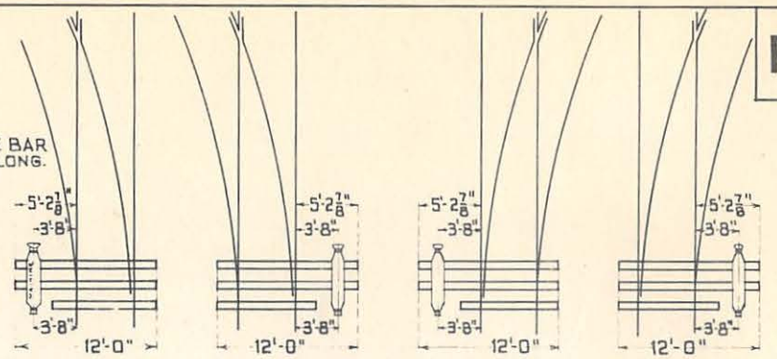
P 8



TIE AND MACHINE LAYOUT

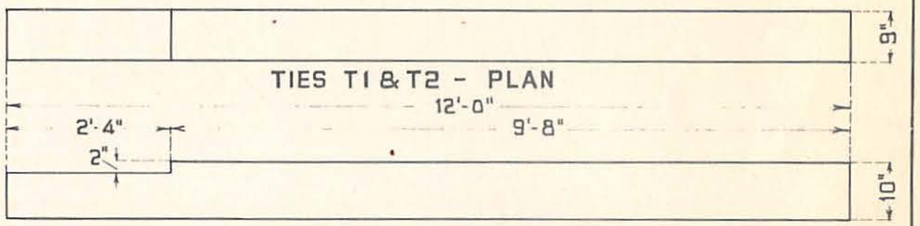


EXTENSION PLATES AND MACHINE



L.H. TURNOUT L.H. MACHINE | L.H. TURNOUT R.H. MACHINE | R.H. TURNOUT L.H. MACHINE | R.H. TURNOUT R.H. MACHINE

MACHINE LOCATION WITH TURNOUT DIRECTION



TIES T1 & T2 - ELEVATION

TIES - SPECIAL T-0 - 9" x 10". TIES T1 AND T2 TO BE FRAMED AS SHOWN. ALL TIES TO BE CREOSOTED.

PLATES - SPECIAL - EXTENSION #1A AND #1. SEE STD. PLAN P8A.

PLATES - STANDARD - GAGE, #1A AND #1 - SEE STD. PLANS - F20A - F21A - F22A - F24A - F25A - F26A

NOTE - ALL TIES (EXCEPT MOVEMENT TIMBER) AND PLATES TO BE ORDERED BY DIV. ENGR. HOLES IN TIES FOR SWITCH MACHINE TO BE DRILLED IN FIELD. HOLES DRILLED IN FIELD TO BE FILLED WITH HOT CREOSOTE AND ALLOWED TO STAND OVERNIGHT.

BOSTON AND MAINE R.R.

STANDARD POWER SWITCH LAYOUT

WITH TIE FRAMING

5B. 5C. 5D. DUAL CONTROL G.R.S.CO.

APPROVED

ENGINEER SIGNALS AND TELEGRAPH

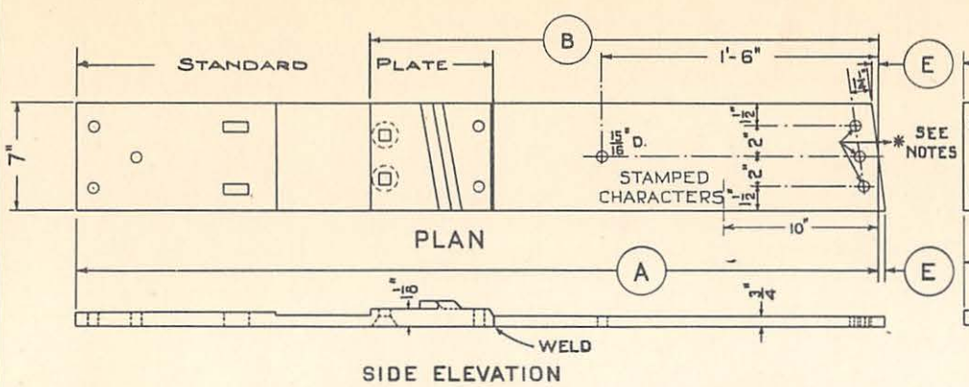
ENGINEER M. OF W.

CHIEF ENGINEER

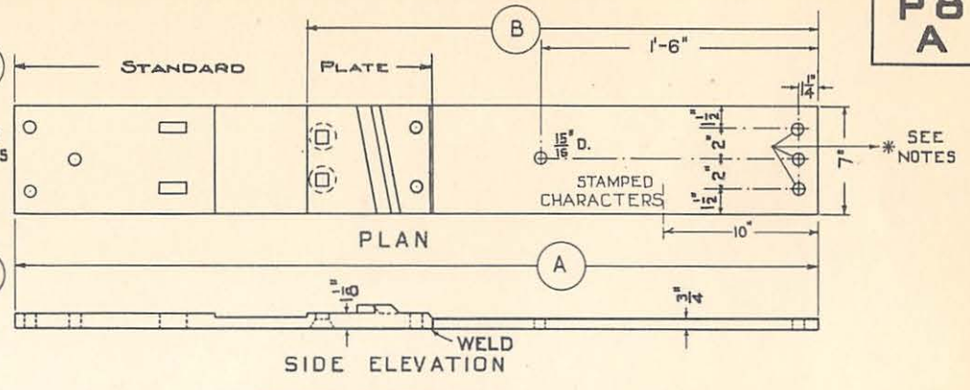
PLAN	
DRAWN: RBH & T.B.W.	
CHECKED:	
CORRECT:	
ISSUE	DATE
D	4·5·44
E	5·12·44
F	11·6·45
G	12-29-47

D - GENERAL REVISION.
E - CORRECT "B" FOR 85# RAIL.
F - NEW LOCATION FOR STAMPING.
G - 115# RAIL ADDED

P8 A



SIDE ELEVATION



SIDE ELEVATION

RAIL R	PLATE NO.	15' SWITCH 1°54'37" A	B	E	PLATE NO.	20' SWITCH 1°25'57" A	B	E	PLATE NO.	30' SWITCH 0°57'18" A	B	E
85#	1	4'-3 3/16"	2'-8 7/16"	1/8"	1	4'-3 5/8"	2'-8 1/2"	3/32"	1	4'-4"	2'-8 7/8"	1/16"
	1A	4'-4 1/4"	2'-9 1/8"	1/8"	1A	4'-4 3/16"	2'-9 1/16"	3/32"	1A	4'-4 1/4"	2'-9 1/8"	1/16"
100#	1	4'-3 5/16"	2'-8 3/16"	1/8"	1	4'-3 3/8"	2'-8 1/4"	3/32"	1	4'-3 3/4"	2'-8 5/8"	1/16"
112# 115#	1A	4'-4"	2'-8 7/8"	1/8"	1A	4'-3 15/16"	2'-8 13/16"	3/32"	1A	4'-4"	2'-8 7/8"	1/16"
130#	1	4'-2 15/16"	2'-7 13/16"	1/8"	1	4'-3"	2'-7 7/8"	3/32"	1	4'-3 3/8"	2'-8 1/4"	1/16"
131#	1A	4'-3 5/8"	2'-8 1/2"	1/8"	1A	4'-3 9/16"	2'-8 7/16"	3/32"	1A	4'-3 5/8"	2'-8 1/2"	1/16"

R.H. TURNOUT - R.H. MACHINE

L.H. TURNOUT - L.H. MACHINE IS THE SAME EXCEPT OPPOSITE HAND

RAIL R	PLATE NO.	15', 20', 30' SWITCH A	B
85#	1	4'-4 3/4"	2'-9 5/8"
	1A	4'-4 3/4"	2'-9 5/8"
100#	1	4'-4 1/2"	2'-9 3/8"
112# 115#	1A	4'-4 1/2"	2'-9 3/8"
130#	1	4'-4 1/8"	2'-9"
131#	1A	4'-4 1/8"	2'-9"

L.H. TURNOUT - R.H. MACHINE
R.H. TURNOUT - L.H. MACHINE

END OF PLATES - SHOWING ADDITIONAL HOLES FOR M20 SELECTOR LEVER LATCH.

NOTE:- THESE DIMENSIONS APPLY TO SQUARE END PLATES ALSO AND ARE REQUIRED ONLY FOR M20 MOVEMENTS.

NOTES

EXTENSION PLATES - SHALL BE WELDED TO STANDARD SLIDE PLATES FOR ADJUSTABLE BRACES AS SHOWN ON STANDARD PLANS F20A - F21A - F22A - F24A - F25A - F28A.

STAMPED CHARACTERS - 3/4" HIGH - BEVELED END PLATES TO SHOW :- NUMBER OF PLATE, WEIGHT OF RAIL, LENGTH OF SWITCH, MACHINE LOCATION, TURNOUT DIRECTION: EXAMPLE $^{1A}_{LT}\,^{130}_{LM}\,^{15}$. SQUARE END PLATES TO SHOW:- WEIGHT OF RAIL, MACHINE LOCATION, TURNOUT DIRECTION: EXAMPLE 130 LT RM RT LM.

ORDERING - SPECIFY:- NUMBER OF PLATE, WEIGHT OF RAIL, LENGTH OF SWITCH, MACHINE LOCATION, TURNOUT DIRECTION AS PER STANDARD PLANS P8 AND P8A. TWO EXTENSION PLATES WANTED FOR EACH TURNOUT. * 13/16" FOR GRS SWITCH MOVEMENTS, 15/16" FOR US&S SWITCH MOVEMENTS. SPECIFY MOVEMENT NUMBER.

BOSTON AND MAINE R.R.

EXTENSION PLATES

FOR 15', 20' AND 30' SWITCHES

GRS Co., 5A, 5B, 5C, 5D AND US & S Co., M2, M20, M22A, M22B.

ELECTRIC SWITCH MOVEMENT

APPROVED

E. M. Fox
ENGINEER SIGNALS AND TELEGRAPH

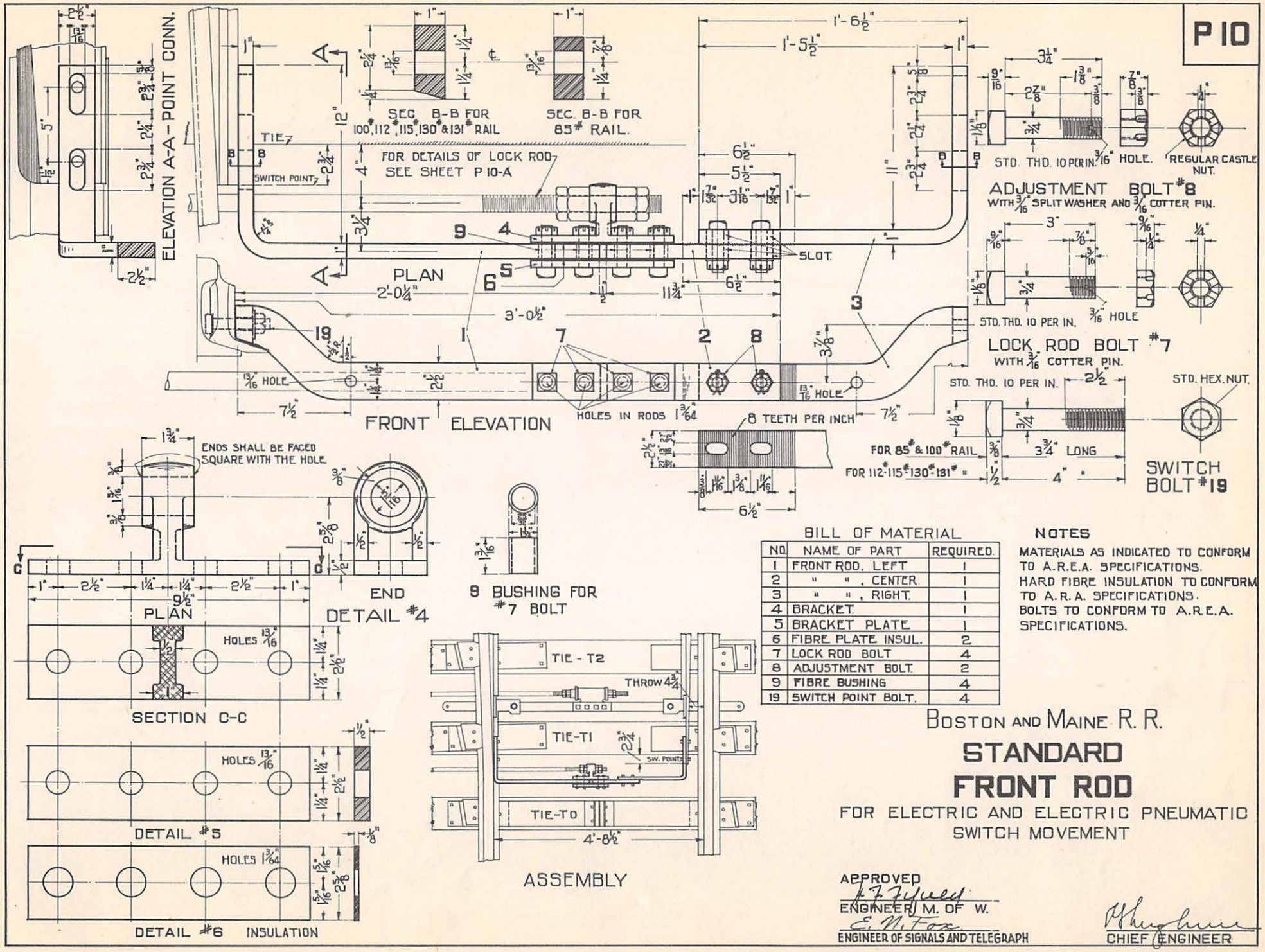
H. F. Fifield
ENGINEER M. OF W.

F. Gaghan
CHIEF ENGINEER

PLAN	
DRAWN J.L.B.	
CHECKED J.J.R	
CORRECT. A.R.B.	
ISSUE	DATE.
A	8-1-32
B	11-1-36
C	2-1-39
D	12-29-47

B 112# AND 131# RAIL NOTES.
C - APPROVAL DATE
D - 115# RAIL ADDED.

P 10



BILL OF MATERIAL

NO.	NAME OF PART	REQUIRED.
1	FRONT ROD, LEFT	1
2	" " , CENTER	1
3	" " , RIGHT.	1
4	BRACKET	1
5	BRACKET PLATE	1
6	FIBRE PLATE INSUL.	2
7	LOCK ROD BOLT	4
8	ADJUSTMENT BOLT.	2
9	FIBRE BUSHING	4
19	SWITCH POINT BOLT.	4

NOTES

MATERIALS AS INDICATED TO CONFORM TO A.R.E.A. SPECIFICATIONS.
HARD FIBRE INSULATION TO CONFORM TO A.R.A. SPECIFICATIONS.
BOLTS TO CONFORM TO A.R.E.A. SPECIFICATIONS.

BOSTON AND MAINE R. R.

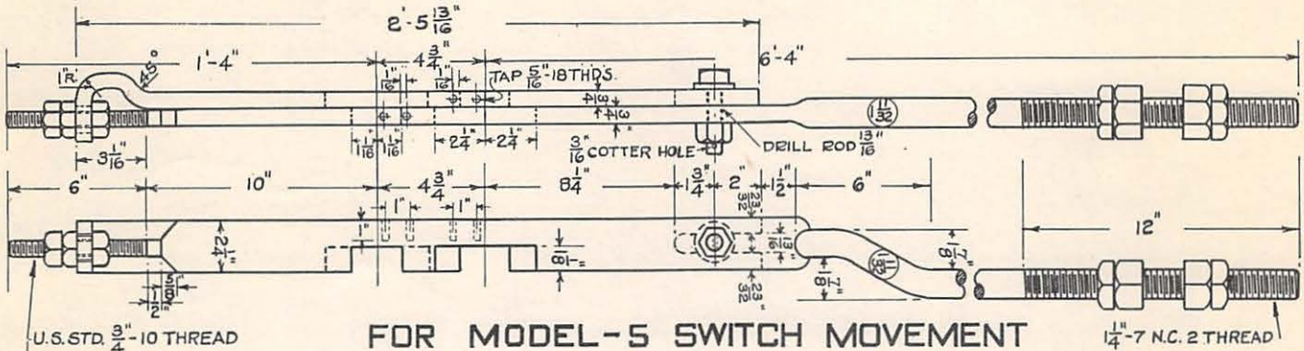
STANDARD FRONT ROD

FOR ELECTRIC AND ELECTRIC PNEUMATIC SWITCH MOVEMENT

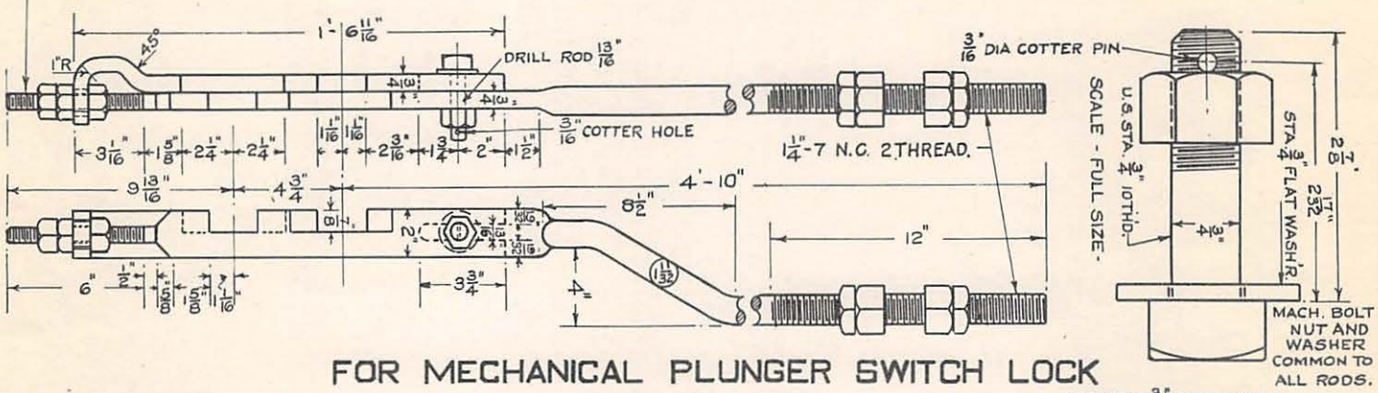
APPROVED
F. F. Fifield
ENGINEER M. OF W.
E. M. Fox
ENGINEER OF SIGNALS AND TELEGRAPH
CHIEF ENGINEER

PLAN		
DRAWN BY J.L.A. CHECKED F.W.P. CORRECT J.J.R.		
ISSUE	DATE	
A	8-1-32	
B	4-26-34	

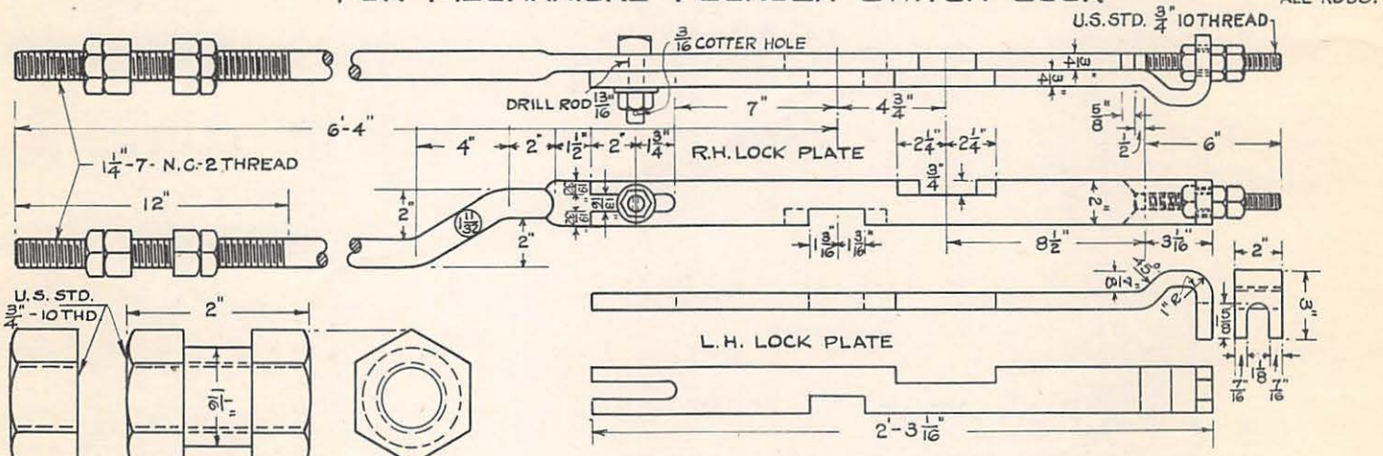
B THREE NEW RODS ADDED



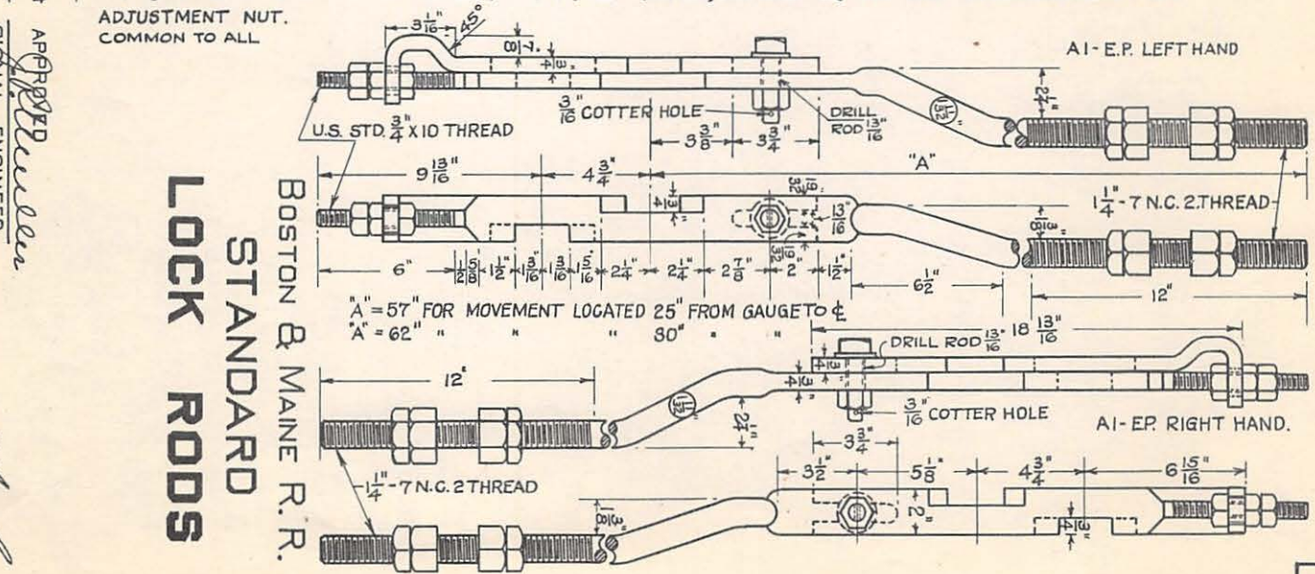
FOR MODEL-5 SWITCH MOVEMENT



FOR MECHANICAL PLUNGER SWITCH LOCK



FOR TYPE M-2, M-20 & M-22 MOVEMENTS.



FOR TYPE A-1 E.P. SWITCH MOVEMENT

BOSTON & MAINE R.R.

STANDARD LOCK RODS

APPROVED
SIGNAL ENGINEER
ENGINEER M. OF W.

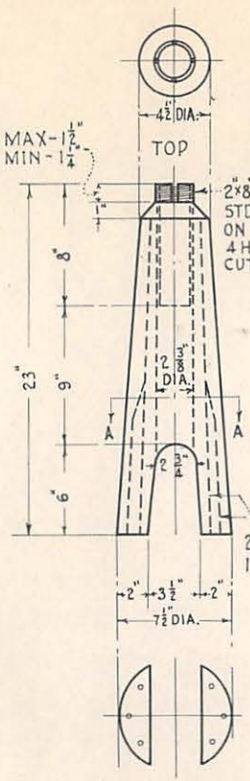
CHIEF ENGINEER

P 10-A

P 10 A

PLAN	
DRAWN F.A.T.	
CHECKED	
CORRECT C.M.F.	
ISSUE	DATE
B	5-29-41

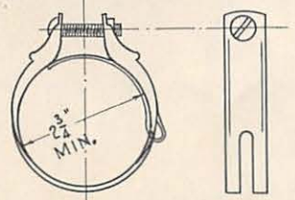
FILL HOLES WITH POTHEAD COMPOUND. PAINT FIBRES WITH INSULATING PAINT OR VARNISH.



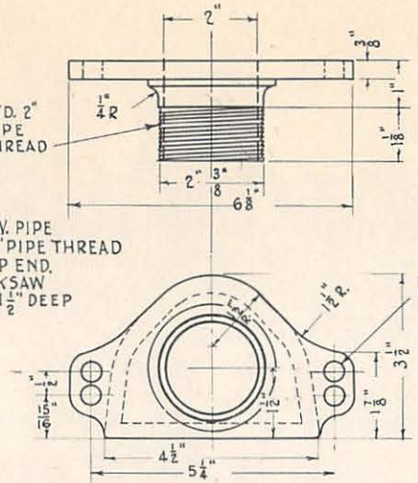
BASE

SECTION A-A

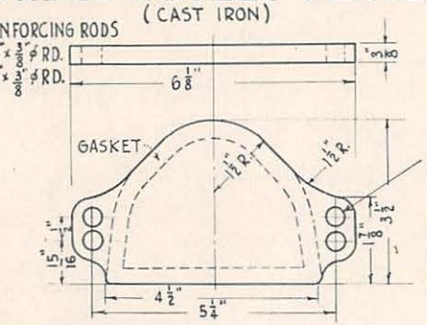
CABLE RISER



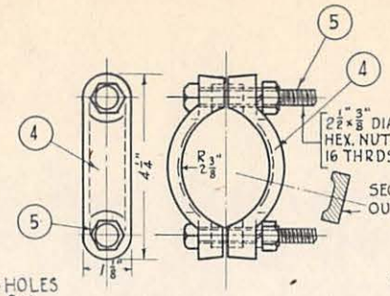
CLAMP
FOR 2⅜" 3 PLY RUBBER HOSE



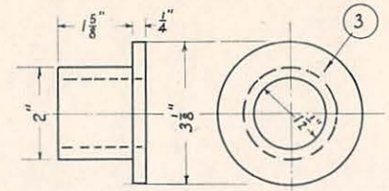
CABLE OUTLET PLATE
(CAST IRON)



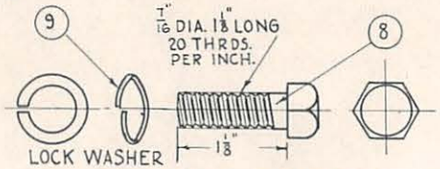
WIRE OUTLET PLATE
(CAST IRON)



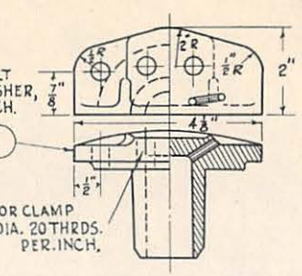
GALV. PIPE CLAMP



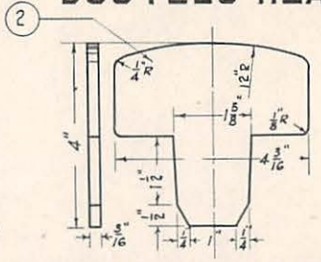
RUBBER GASKET



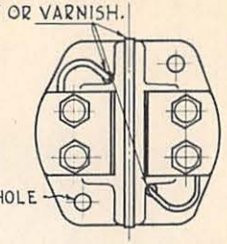
CLAMP SCREW
(BRONZE)

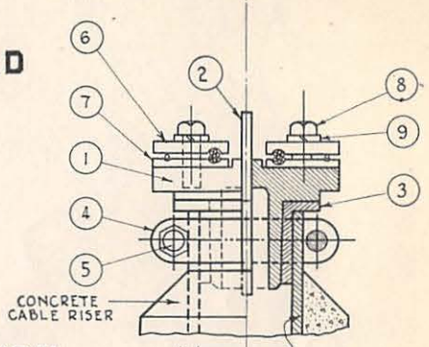


BOOTLEG HEAD

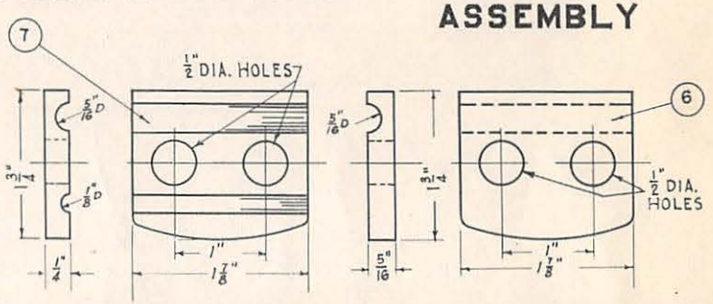


FIBRE INSULATION





ASSEMBLY



TINNED BRASS WIRE CLAMPS

NOTES:
CABLE RISER TO BE MADE OF 3000# CONCRETE-REINFORCED WITH ⅜" ø BARS OF STRUCTURAL GRADE STEEL AS SHOWN.
MAXIMUM SIZE OF AGGREGATE ¾"
MATERIAL AND WORKMANSHIP TO COMFORM TO "B.&M." SPECIFICATIONS FOR CONCRETE, PLAIN AND REINFORCED.

BOSTON AND MAINE RAILROAD

CONCRETE CABLE RISER AND FITTINGS

APPROVED
ENGINEER OF SIGNALS & TELEGRAPH

CHIEF ENGINEER

PLAN	
DRAWN F.A.T.	
CHECKED xxx	
CORRECT C.M.E.	
ISSUE	DATE
B	5-29-41

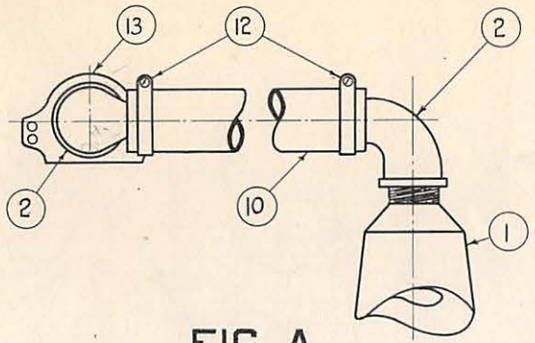


FIG. A

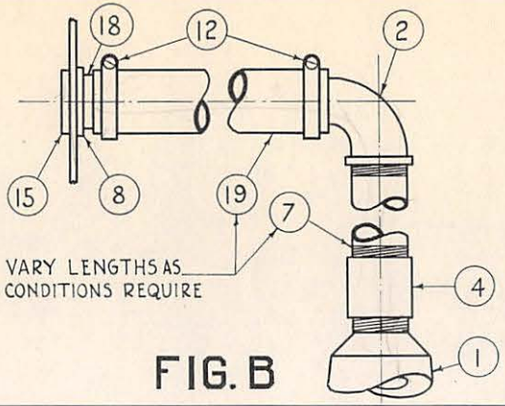


FIG. B

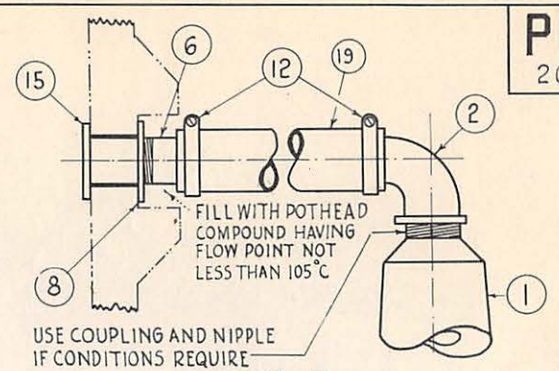


FIG. C

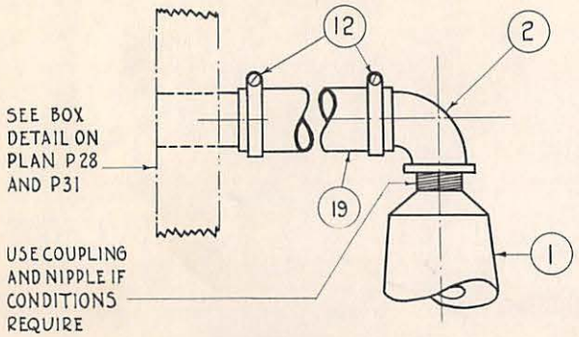


FIG. D

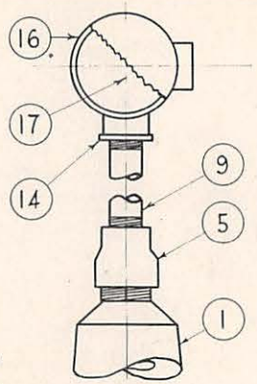


FIG. E

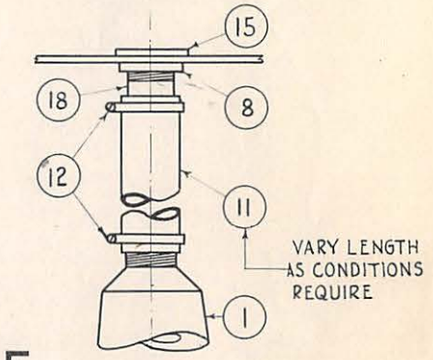


FIG. F

REF.	FIG. A	FIG. B	FIG. C	FIG. D	FIG. E	FIG. F	NAME
1	1	1	1	1	1	1	PRECAST CONCRETE CABLE RISER PLAN P14 SHEET NO.1
2	2	1	1	1			2" STD. 90° GALV. MALLEABLE STREET ELBOW
4		1	1-IF REQUIRED	1-IF REQUIRED			2" STD. GALV. STEEL PIPE COUPLING
5					1		2"×1" STD. GALV. MALLEABLE REDUCING COUPLING
6			1				2"×6" " " STEEL PIPE NIPPLE (ONE END 3" THREAD)
7		1	1-IF REQUIRED	1-IF REQUIRED			2"×10" " " " " " (SPECIFY LENGTH FOR FIGS. C. & D.)
8		1	1			1	2" GALV. PIPE LOCKNUT
9					1		1" " RIGID CONDUIT (GIVE LENGTH REQUIRED)
10	1						2 3/8"×17" 3 PLY RUBBER RADIATOR HOSE
11						1	2 3/8" " " " " (GIVE LENGTH REQUIRED)
12	2	2	2	2		2	HOSE CLAMPS FOR 2 3/8" 3 PLY RUBBER RADIATOR HOSE PLAN P14 SHEET NO.1
13	1						CABLE OUTLET PLATE PLAN P14 SHEET NO.1
14					1		1" GALV. CONDUIT LOCKNUT
15		1	1			1	2" " " BUSHING
16					1		TYPE GRL 376 CONDULET & GASKET (CROUSE-HINDS) OR EQUAL
17					1		CONNECTION BLOCK *CB303-(CROUSE-HINDS) OR EQUAL
18		1				1	2"×3" STD. GALV. STEEL PIPE NIPPLE (ONE END 2" THREAD)
19		1	1	1			2 3/8"×8" 3 PLY RUBBER RADIATOR HOSE

ALL PIPE FITTINGS TO BE REAMED AND CHAMFERED

FIG.	FITTINGS FOR
A	SWITCH CIRCUIT CONTROLLER
B	STEEL OR WOOD CASE
C	BATTERY BOX (PLAN P30)
D	" " (PLANS P28 & P31)
E	GATES AND SWITCH LAMPS
F	STEEL OR WOOD CASE

BOSTON AND MAINE RAILROAD

CONCRETE CABLE RISER AND FITTINGS

APPROVED

ENGINEER OF SIGNALS AND TELEGRAPH

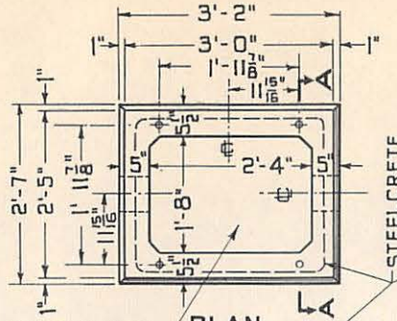
CHIEF ENGINEER

PLAN	
DRAWN	R.B.H.
CHECKED	J.L.B.
CORRECT	F.B.F.
	J.J.R.

ISSUE	DATE
A	8-1-32
B	8-24-36

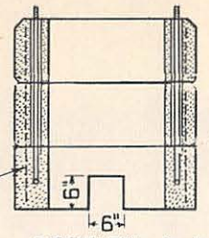
B CHANGE IN BOLT LENGTH AND BEVEL

P 15

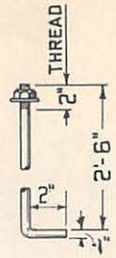


PLAN

AFTER INSTALLING HOUSING FOUNDATIONS FILL WITH SAND TO TOP SURFACE.

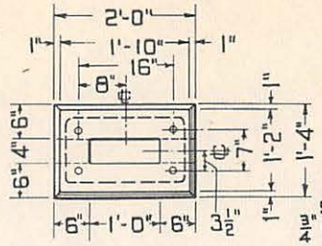


SECTION A-A



ANCHOR BOLT

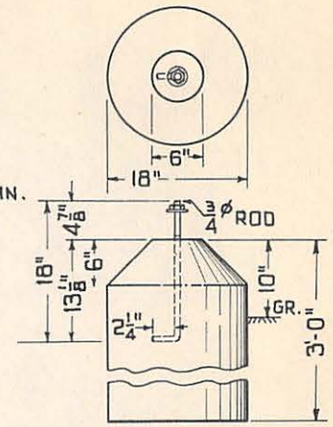
O.H.STEEL 4 WANTED
STD. HEX. NUT AND WASHER
1" DIA. ROD-STD. THREAD-8 PER IN.



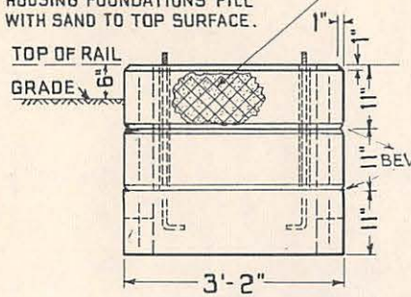
ANCHOR BOLT

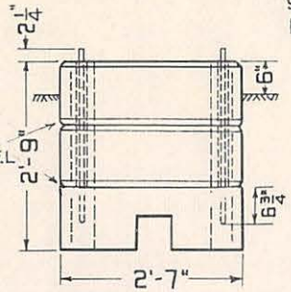
O.H.STEEL-4 WANTED
STD. HEX. NUT & WASHER
DIA. ROD-THREAD-10 PER IN.

PIPE SLEEVE
1" PIPE
8 WANTED

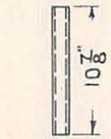


RELAY HOUSE PIER

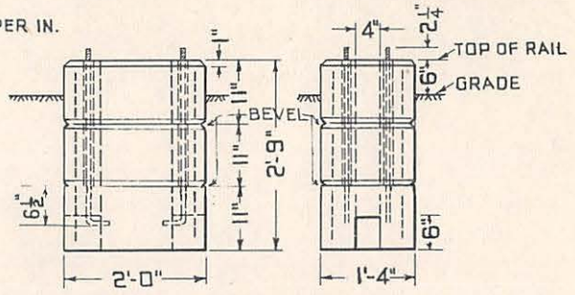




CROSSING SIGNAL RELAY HOUSING



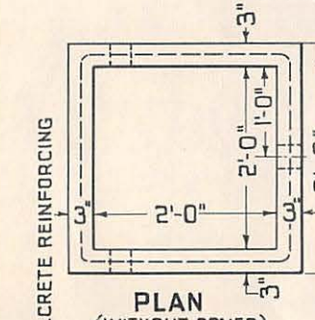
PIPE SLEEVE
1¼" PIPE
8 WANTED



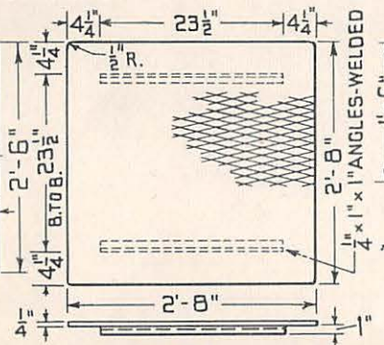
TERMINAL BOARD OR TRACK BATTERY HOUSING

SIGNAL RELAY HOUSING WITHOUT MAST

MAY BE CAST SOLID IN FIELD NO REINFORCM'T WHEN AUTHORIZED BY SIG. ENGR.

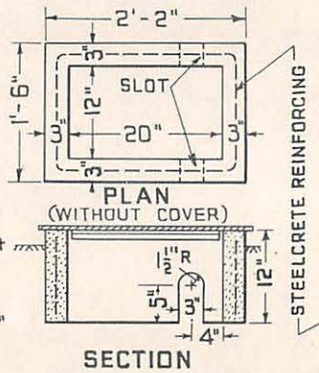


PLAN (WITHOUT COVER)



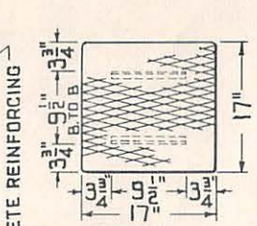
COVER

¼" STEEL PLATE (CHECKERED) REMOVE SHARP EDGES

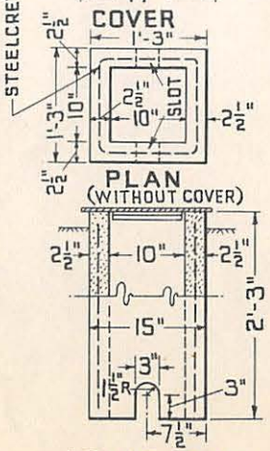


PLAN (WITHOUT COVER)

SECTION

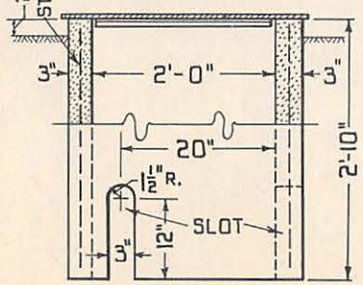


COVER



PLAN (WITHOUT COVER)

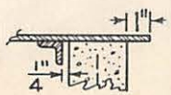
VALVE BOX STYLE NO. 3

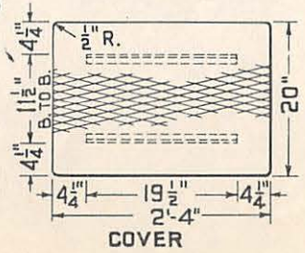


RESERVOIR & VALVE BOX STYLE NO. 1

NOTES

TOP OF BOXES SET 2" ABOVE GROUND.





COVER

VALVE BOX STYLE NO. 2

FOUNDATION

CONCRETE - BOSTON AND MAINE R.R. STANDARD SPECIFICATIONS - MIX. 1-2-4 REINFORCED - PRECAST.

REINFORCEMENT - STEELCRETE STUCCO BND OR 3.6 #/SQ. YD. OR EQUAL QUALITY.

RELAY HOUSE - VOLUME	12.0 CU. FT.	WEIGHT	1800	REINFOR.	23.0 SQ. FT.
BATTERY HOUSE - "	6.5 CU. FT.	"	975	"	12.0 SQ. FT.
VALVE BOX NO. 1 - "	6.3 CU. FT.	"	950	"	24.0 SQ. FT.
VALVE BOX NO. 2 - "	1.5 CU. FT.	"	225	"	5.0 SQ. FT.
VALVE BOX NO. 3 - "	2.0 CU. FT.	"	300	"	8.5 SQ. FT.
RELAY HO. PIER - "	4.8 CU. FT.	"	720		

BOSTON AND MAINE R.R.

STANDARD SIGNAL FOUNDATION

RELAY HOUSINGS-TRACK BATTERY HOUSING
RELAY HOUSE PIER-VALVE & RESERVOIR BOXES

APPROVED

ENGINEER OF SIGNALS AND TELEGRAPH

ENGINEER M. OF W.

CHIEF ENGINEER

PLAN	
DRAWN	J.L.B.
CHECKED	R.B.H. F.B.F
CORRECT	J.J.R.

ISSUE	DATE
A	8-1-32
B	6-15-35
C	3-14-42
D	3-1-54

B - CHANGE IN BOLT LENGTHS AND INSERTS.

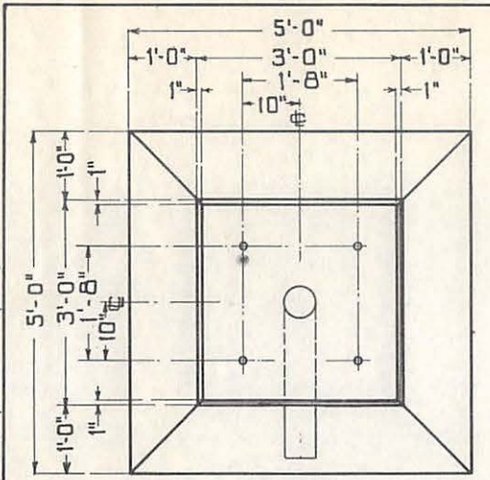
C - CROSSING SIGNAL FOUNDATION CHANGES.

D - CHANGED THREAD ON ANCHOR ROD OF CROSSING SIGNAL FROM 2" TO 3".

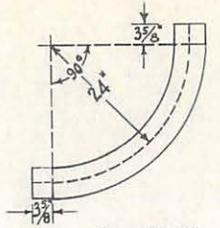
REPLACED CONC. INSERT IN BRACKET POLE FDN. WITH A 5" CONDUIT ELBOW.

REPLACED 1" PIPE SLEEVE WITH 1¼" CARDBOARD TUBE

P 16

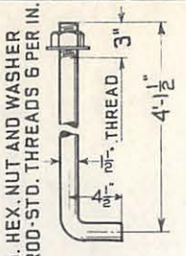


PLAN

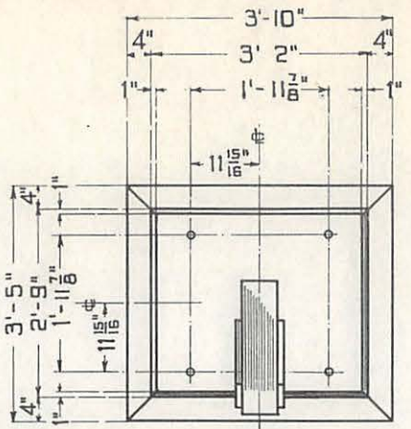


5" CONDUIT ELBOW

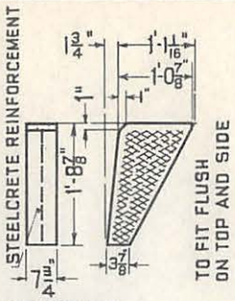
O.D. = 5.563"
I.D. = 5.047"



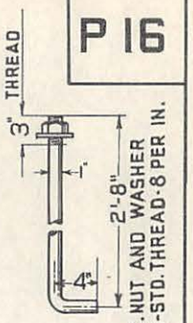
ANCHOR BOLT
O. H. STEEL
4 WANTED



PLAN

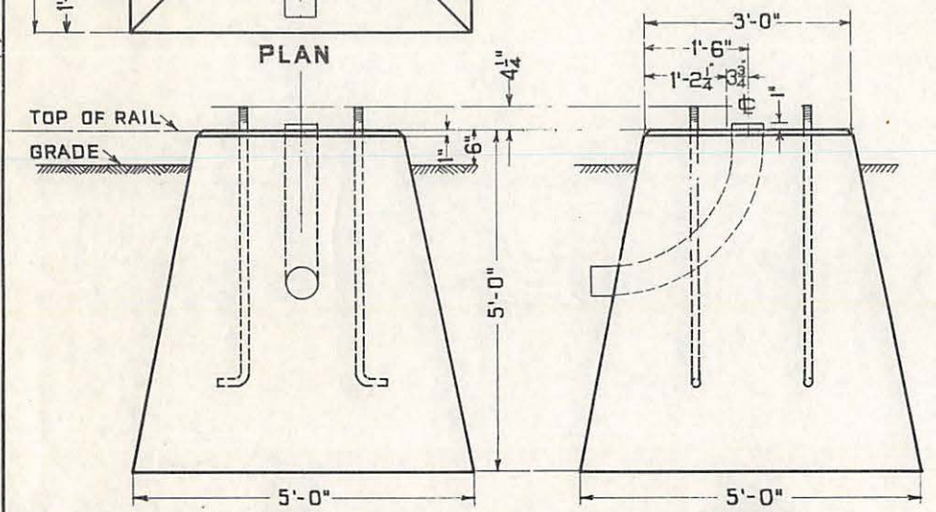


CONCRETE INSERT PRECAST



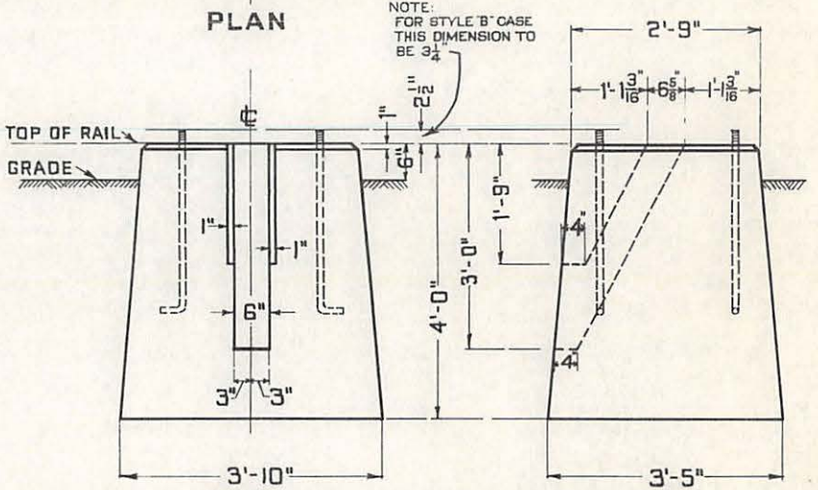
ANCHOR BOLT

STD. HEX. NUT AND WASHER
1"ØROD-STD. THREAD-8 PER IN.



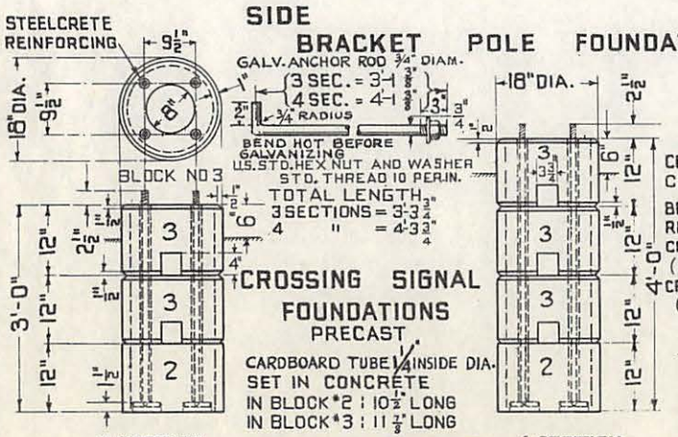
SIDE FRONT

BRACKET POLE FOUNDATION



FRONT SIDE

RELAY CASE FOUNDATION
WITH MAST



FOUNDATIONS

CONCRETE - BOSTON AND MAINE R.R. STANDARD SPECIFICATIONS 3000# CLASS STEELCRETE STUCCO BINDER 1.8 # PER SQ. YD. OR EQUAL QUALITY

BRACKET POLE - VOLUME	82.00 CU. FT. -	WEIGHT 12 300# -	REINF.	1.0 SQ. FT.
RELAY CASE - "	43.00 CU. FT. - "	6400# - "		1.0 SQ. FT.
CROSSING SIG. - " (3 SECTION)	4.25 CU. FT. - "	640# - "		10.5 SQ. FT.
CROSSING SIG. - " (4 SECTION)	5.70 CU. FT. - "	850# - "		14.0 SQ. FT.

BOSTON AND MAINE R. R.
STANDARD
SIGNAL FOUNDATIONS
BRACKET POLE RELAY CASE
CROSSING SIGNAL

APPROVED

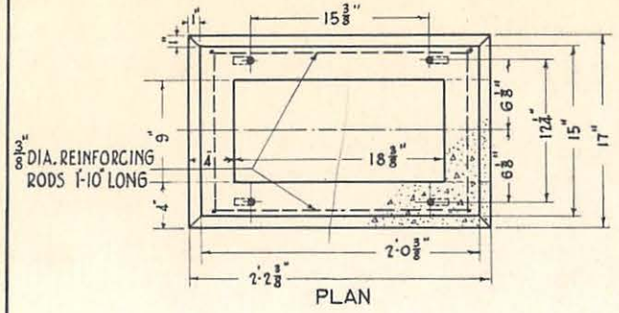
E. M. Fox
ENGINEER OF SIGNALS & TELEGRAPH

CHIEF ENGINEER

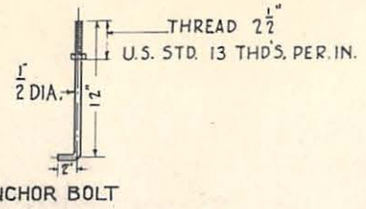
PLAN	
DRAWN EAT.	
CHECKED [illegible]	
CORRECT [illegible]	
ISSUE	DATE
B	3-14-42

B - NEW DESIGN

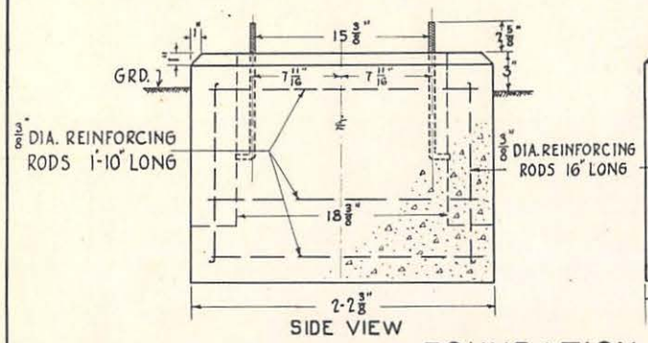
P17



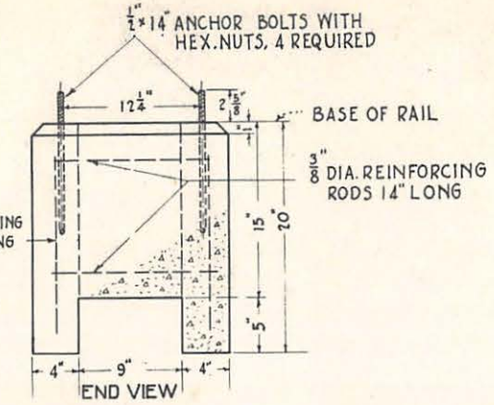
PLAN



ANCHOR BOLT



SIDE VIEW

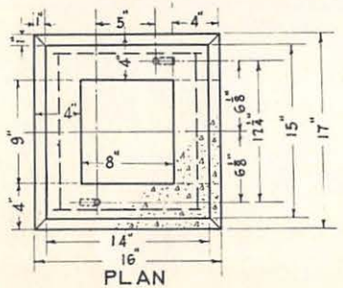


END VIEW

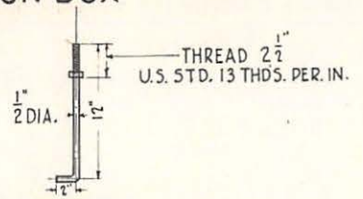
FOUNDATION FOR 22-33 AND 44 WAY JUNCTION BOX

REF. NO.	FOUNDATION	VOLUME	WEIGHT	FOR USE WITH JCT. BOX
P17B-1	14 WAY	2.19 C.U. FT.	318 LBS.	U.S.&S.CO. PLATE L-1251
P17B-2	22,33&44 WAY	3.06 C.U. FT.	444 LBS.	

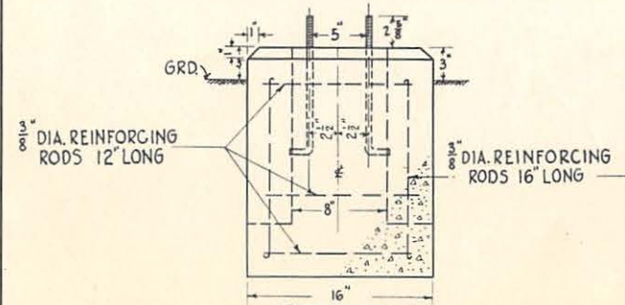
"Note" Concrete to be in accordance with Boston and Maine Railroad Specifications for 3000# Concrete.



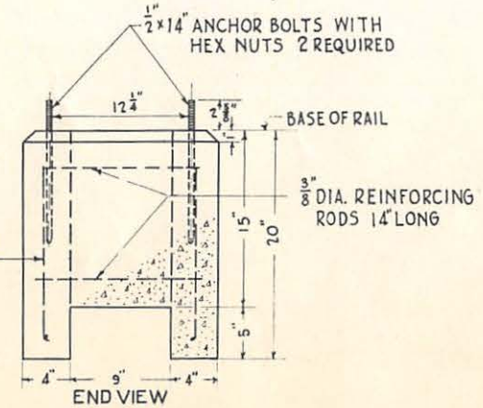
PLAN



ANCHOR BOLT



SIDE VIEW



END VIEW

FOUNDATION FOR 14 WAY JUNCTION BOX

BOSTON AND MAINE R. R.

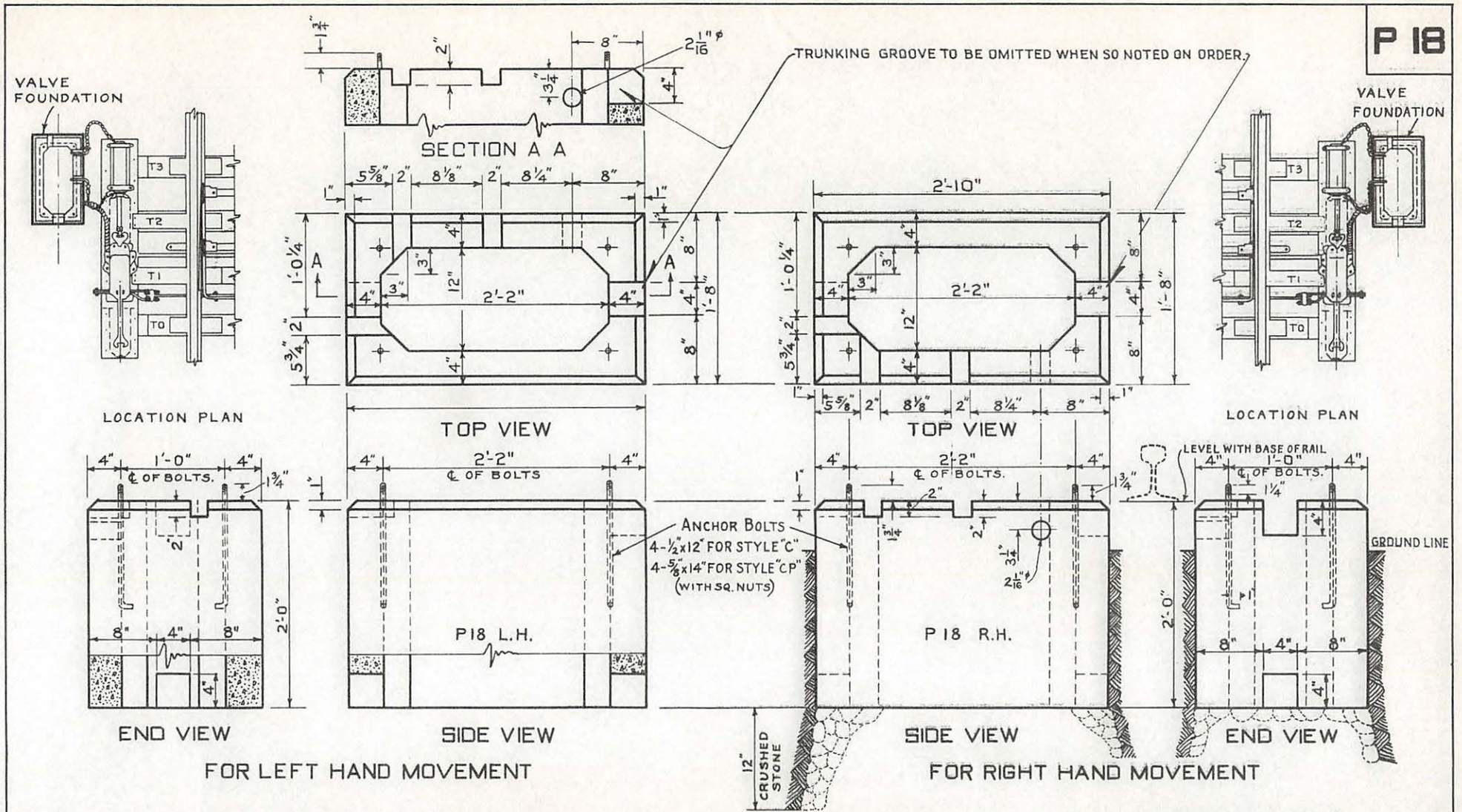
STANDARD FOUNDATIONS CABLE JUNCTION BOXES

APPROVED J. Rheem
ENGINEER OF SIGNALS & TELEGRAPH

W. H. Cummings
CHIEF ENGINEER

PLAN	
DRAWN BY J.B.M.	
CHECKED BY E.R.M.	
CORRECT J.J.R.	
ISSUE	DATE
A	3-21-31

P 18



NOTE:-
CONCRETE PROPORTIONS 1:2:4.
PRECAST FOUNDATIONS.
STONE TO BE THOROUGHLY TAMPED BEFORE SETTING FOUNDATION.
TOP OF FOUNDATION TO BE SET LEVEL WITH BASE OF RAIL.
FOUNDATIONS TO BE MARKED WITH LETTERS TO SHOW STYLE:- WHETHER FOR LEFT OR RIGHT HAND MOVEMENT; – PRECEDED BY SHEET NUMBER.
5.16 CU. FT. OF CONCRETE.
774 LBS, APPROXIMATE WEIGHT.

BOSTON AND MAINE R. R.

STANDARD
VALVE FOUNDATIONS
FOR E. P. SWITCH-STYLES "C" AND "C.P."

APPROVED

A.F. Fiveed
ENGINEER M. OF W.

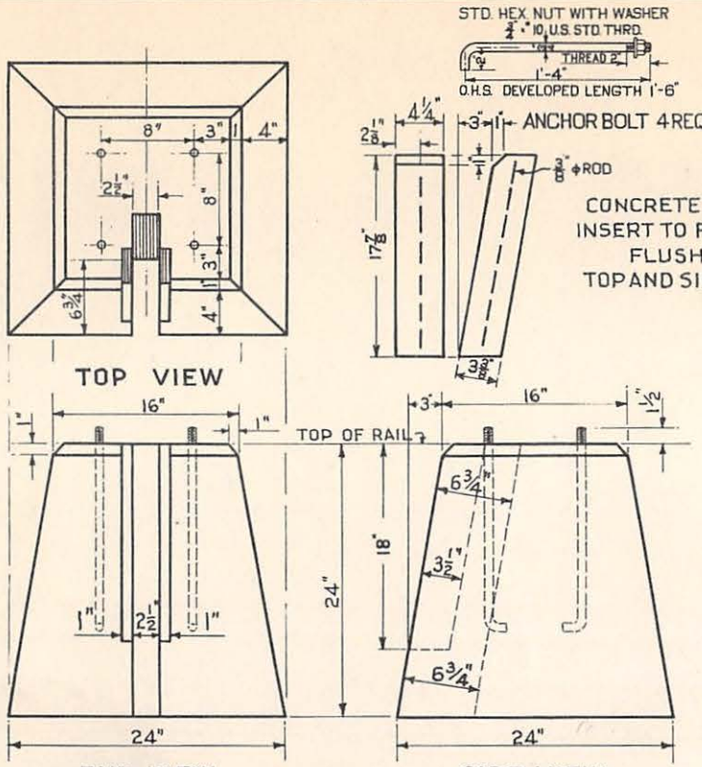
W.F. Scott
SIGNAL ENGINEER

CHIEF ENGINEER

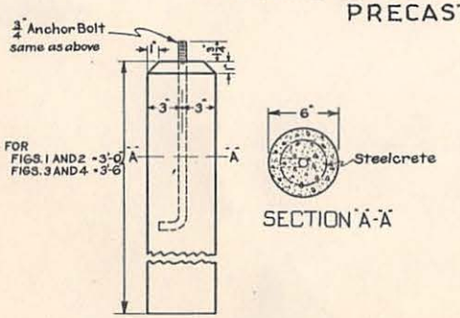
PLAN	
DRAWN R.W.H.	
CHECKED J.J.R.	
CORRECT J.J.R.	
ISSUE	DATE
A	3-21-31.
B	6-15-35.
C	3-12-38.
D	2-1-39

B CHANGE IN BOLT LENGTHS AND INSERTS.
C FOUNDATION PIER FOR RELAY HOUSING ADDED.
D - APPROVAL DATE

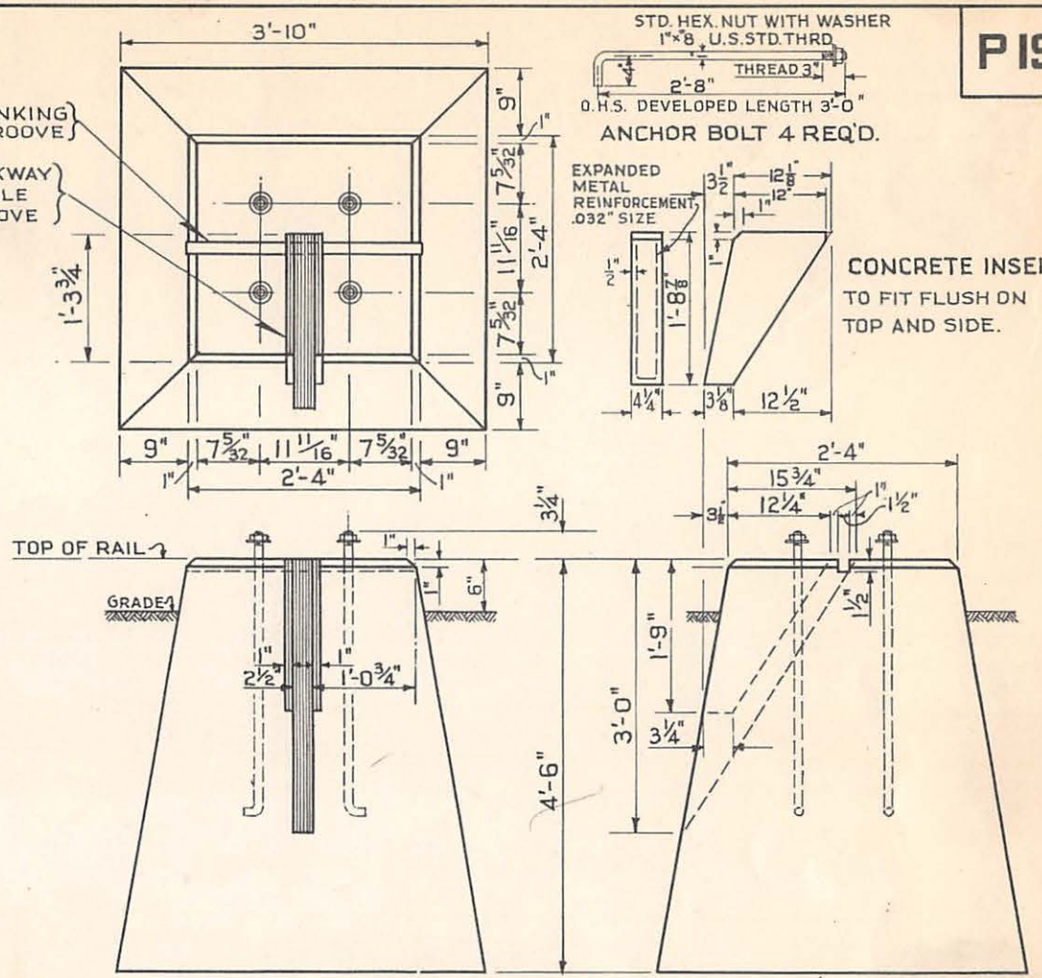
P19



FOUNDATION FOR SEARCHLIGHT DWARF SIGNAL
1 REQ'D PER SIGNAL
VOLUME 5½± CU. FT., WT. 825 LBS.±
PRECAST



FOUNDATION PIER FOR RELAY HOUSING P57.
4 REQ'D PER HOUSING.
WEIGHT 3'-0" PIER - 88 LBS.
3'-6" " - 103 " "



FOUNDATION FOR GROUND MAST SIGNALS.
VOLUME 42¾± CU. FT., WEIGHT 6,400± LBS. 1 REQ'D PER MAST.
P19-1 OMIT TRUNKING GROOVE. P19-2 OMIT PARKWAY CABLE GROOVE.

CONCRETE - BOSTON AND MAINE R.R. STANDARD SPECIFICATIONS.
MIX: 1:3:5

BOSTON AND MAINE R. R.

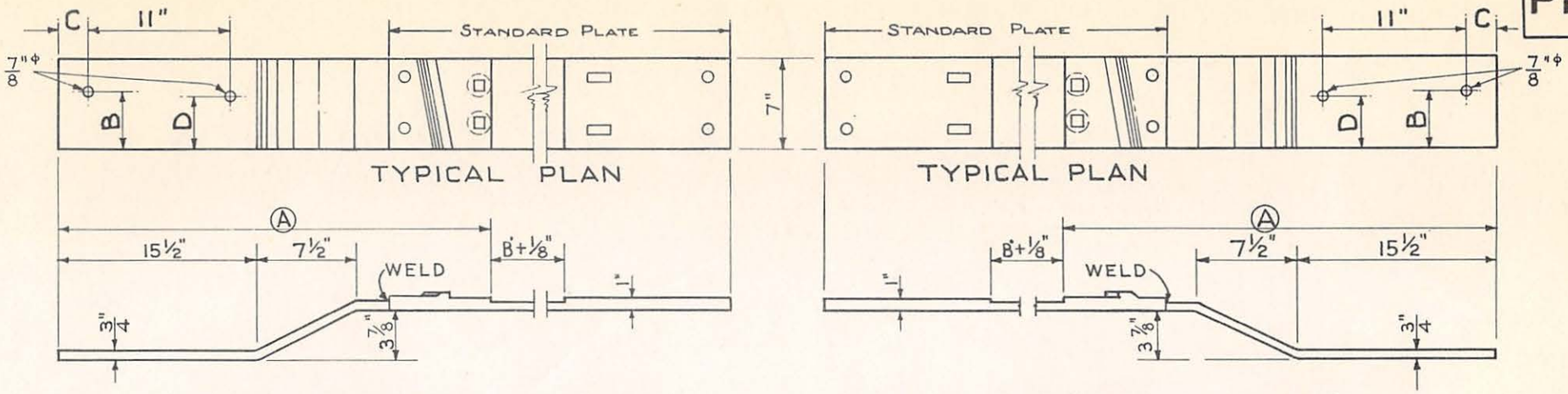
STANDARD
SIGNAL FOUNDATIONS
SEARCHLIGHT DWARF - GROUND MAST

APPROVED
J. F. Fitzgerald
ENGINEER M. OF W.
J. L. Sweeney
ENGINEER OF SIGNALS AND TELEGRAPH
CHIEF ENGINEER

PLAN	
DRAWN R.W.H.	
CHECKED E.W.H.	
CORRECT J.J.R.	
ISSUE	DATE
A	1-26-31
B	8-30-34
C	2-8-48

B- 112# AND 131# RAIL NOTES
C- GEN. REV. & 115# RAIL NOTES.

P24



20' SWITCH			15' SWITCH			30' SWITCH			TURNOUT	MACHINE	PLATE NO.	DIMENSION	15' SWITCH WT OF RAIL			30' SWITCH WT. OF RAIL			20' SWITCH WT OF RAIL		
B	C	D	B	C	D	B	C	D					85#	100-112-115#	130-131#	85#	100-112-115#	130-131#	85#	100-112-115#	130-131#
$4\frac{3}{32}$"	$2\frac{17}{32}$"	$3\frac{13}{16}$"	$4\frac{9}{32}$"	$2\frac{17}{32}$"	$3\frac{29}{32}$"	$3\frac{29}{32}$"	$2\frac{17}{32}$"	$3\frac{23}{32}$"	L H	L H	1	A	2'-8 13/16"	2'-8 5/8"	2'-8 9/32"	2'-9 5/16"	2'-9 1/8"	2'-8 25/32"	2'-9"	2'-8 13/16"	2'-8 15/32"
									R H	R H											
$1\frac{19}{32}$"	$2\frac{7}{16}$"	$1\frac{5}{16}$"	$1\frac{25}{32}$"	$2\frac{13}{32}$"	$1\frac{13}{32}$"	$1\frac{13}{32}$"	$2\frac{15}{32}$"	$1\frac{7}{32}$"	L H	L H	1A	A	2'-9 9/16"	2'-9 3/8"	2'-9 1/32"	2'-9 11/16"	2'-9 1/2"	2'-9 5/32"	2'-9 5/8"	2'-9 7/16"	2'-9 3/32"
									R H	R H											
$3\frac{1}{2}$"	$2\frac{1}{2}$"	$3\frac{1}{2}$"	3 1/2"	$2\frac{1}{2}$"	$3\frac{1}{2}$"	3 1/2"	$2\frac{1}{2}$"	$3\frac{1}{2}$"	L H	R H	1	A	2'-10 1/16"	2'-9 7/8"	2'-9 17/32"	2'-10 1/16"	2'-9 7/8"	2'-9 17/32"	2'-10 1/16"	2'-9 7/8"	2'-9 17/32"
									R H	L H											
1"	$2\frac{1}{2}$"	1"	1"	$2\frac{1}{2}$"	1"	1"	$2\frac{1}{2}$"	1"	L H	R H	1A	A	2'-10 1/16"	2'-9 7/8"	2'-9 17/32"	2'-10 1/16"	2'-9 7/8"	2'-9 17/32"	2'-10 1/16"	2'-9 7/8"	2'-9 17/32"
									R H	L H											

EXTENSION PLATES SHALL BE WELDED TO STANDARD SLIDE PLATES AS SHOWN ON F20A-F21A-F22A-F24A-F25A-F26A.
STAMP CHARACTERS 3/4" HIGH SHOWING WHETHER LEFT OR RIGHT HAND - AND TYPE OF MOVEMENT.
DIMENSIONS ENCIRCLED ◯, HAVE TOLERANCE OF $\frac{1}{32}$"±.
WHEN ORDERING SPECIFY 1 OF #1 - AND 1 OF #1A PER SWITCH - EXTENSION PLATES - HAND OF TURNOUT - HAND OF LOCATION OF MACHINE - LENGTH OF SWITCH - AND WT. OF RAIL - AS PER CHIEF ENGINEER'S STANDARD PLAN P24.

BOSTON AND MAINE R. R.

EXTENSION PLATES

FOR 15 20 AND 30 SWITCHES
A-1 E.P. SANDL MOVEMENT
U. S. & S. CO.

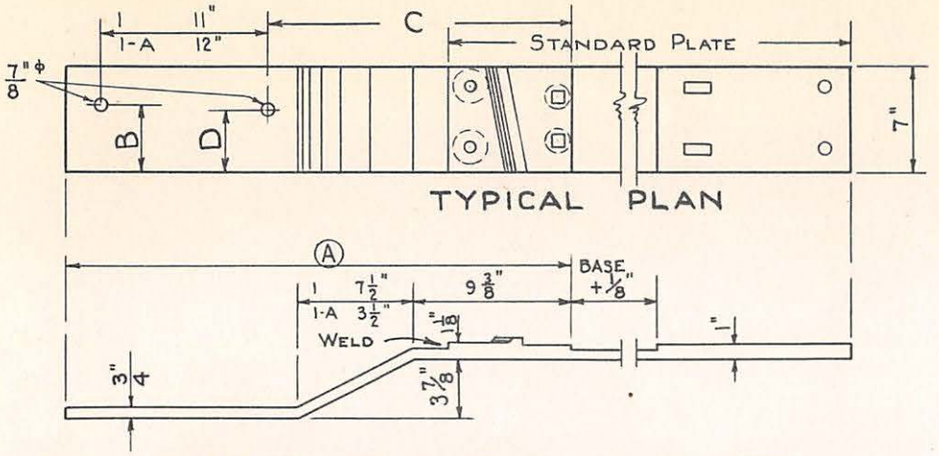
APPROVED
H. F. Fitzgerald
ENGINEER M. OF W.
E. N. Fox.
ENGINEER SIGNALS AND TELEGRAPH
H. Hughes
CHIEF ENGINEER

PLAN
DRAWN: E.M.H.
CHECKED: F. B.F.
CORRECT: F.W.H.

ISSUE	DATE
A	5-14-'45
B	12-29-47

B- 115# RAIL ADDED

P24
A



TYPICAL ELEVATION L.H. PLATES

15' SWITCH			30' SWITCH			TURNOUT	MACHINE	PLATE NO.	DIMENSION	15' SWITCH WT. OF RAIL			30' SWITCH WT. OF RAIL		
B	C	D	B	C	D						100#-112#	115#		100#-112#	115#
$1\frac{21}{32}$"	1'-$7\frac{3}{16}$"	$4\frac{9}{32}$"	$1\frac{5}{8}$"	1'-$7\frac{21}{32}$"	$4\frac{3}{32}$"	R L H	R L H	1	A		2'-$8\frac{3}{4}$"	2'-$8\frac{3}{4}$"		2'-$8\frac{3}{4}$"	2'-$8\frac{3}{4}$"
$5\frac{1}{4}$"	1'-$7\frac{13}{32}$"	$4\frac{27}{32}$"	$4\frac{27}{32}$"	1'-$7\frac{17}{32}$"	$4\frac{21}{32}$"	R L H	R L H	1A	A		2'-$9\frac{1}{2}$"	2'-$9\frac{1}{2}$"		2'-$9\frac{1}{2}$"	2'-$9\frac{1}{2}$"

EXTENSION PLATES SHALL BE WELDED TO STANDARD SLIDE PLATES AS SHOWN ON F20A-F21A-F22A-F24A-F25A-F26A.

STAMP CHARACTERS 3/4" HIGH SHOWING WHETHER LEFT OR RIGHT HAND - AND TYPE OF MOVEMENT.

DIMENSIONS B, C & D AS SHOWN.

WHEN ORDERING SPECIFY 1 OF #1 - AND 1 OF #1A PER SWITCH - EXTENSION PLATES - HAND OF TURNOUT - HAND OF LOCATION OF MACHINE - LENGTH OF SWITCH - AND WT. OF RAIL.

BOSTON AND MAINE R. R.

EXTENSION PLATES

FOR 15' AND 30' SWITCHES

A-5 E.P. S AND L MOVEMENT

U. S. & S. CO.

APPROVED

F. J. Fifield
ENGINEER M. OF W.

E. M. Fox
ENGINEER OF SIGNALS & TELEGRAPH

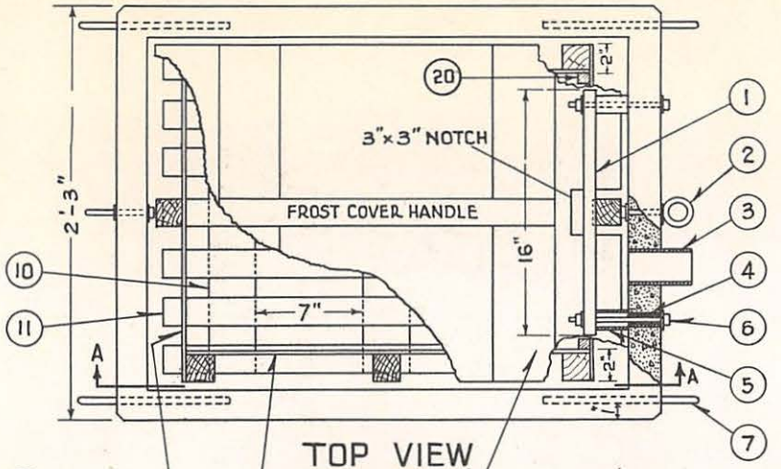
P. Hughan
CHIEF ENGINEER

PLAN	
DRAWN	F.D.F.-HAR.
CHECKED	
CORRECT	E.W.F.

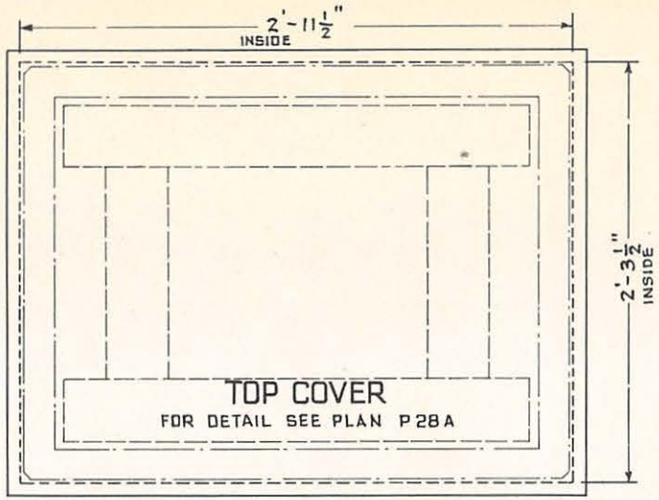
ISSUE	DATE
A	5-12-38
B	3-14-42

B- CLEAT REF. 20 AND NOTE A ADDED COVER CHANGES

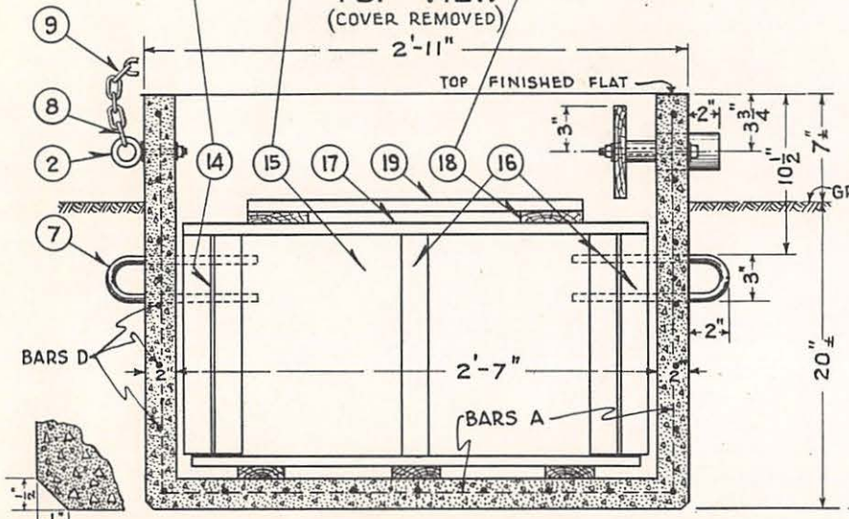
P28



TOP VIEW
(COVER REMOVED)

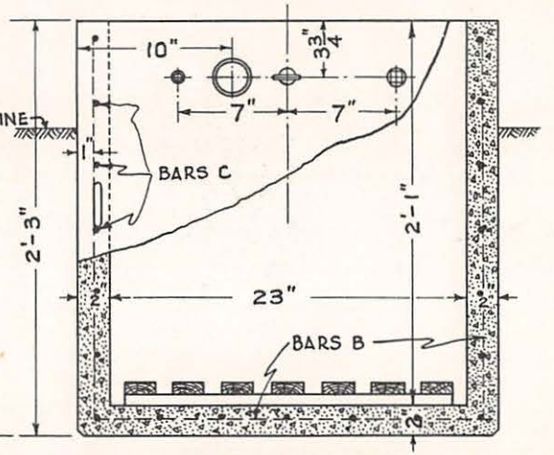


TOP VIEW WITH COVER



CHAMFER ALL OUTSIDE CORNERS EXCEPT TOP.

SECTION A-A
(SHOWING FROST LINING & COVER)



END & SECTION
(FROST LINING NOT SHOWN)

REF	ACCESSORIES FOR BOX	REQ
1	TERMINAL BOARD ¾"x6"x16" WHITE WOOD	1
2	GALV. EYEBOLT COMP. ⅜"ø x 4½" LONG OVERALL-1½" O.D. EYE	2
3	DUCT - 2" GALV. PIPE 4" LONG	1
4	SLEEVE-½" " " 2" "	2
5	SPACER 1" " " 2" "	2
6	MACH. BOLT-GALV. ⅜" x 6" COMPLETE	2
7	LUG-COLD FORMED 2 FT. PCE OF ½" GALV. ROUND IRON	4
8	SPLIT LINK-¼" BLACK IRON	1
9	COMMON CHAIN ¼" BLACK IRON-4½ FT. LONG	1
10	FLOOR SUPPORT ¾" x 3" x 21" SPRUCE	3
11	FLOOR SLAT ¾" x 2" x 2'-5" "	7
	FROST LINING & COVER (SEE NOTE A)	
14	END PANEL ¼" x 14½" x 22" CELOTEX UTILITY BOARD	2
15	SIDE " ¼" x 14½" x 2'-2" " " "	2
16	POST-1¾" x 1¾" x 14½" SPRUCE	8
17	FROST COVER-¾" SPRUCE BOARDING 22" WIDE-30" LONG	1
18	CLEAT ¾" x 4" x 22" SPRUCE	2
19	FROST COVER HANDLE ¾" x 2" x 22" SPRUCE	1
20	CLEAT ¾" x ¾" x 14½" SPRUCE	2

ORDERING INFORMATION

FIG. 1 BATTERY BOX COMPLETE - GROSS WT. APPROX 825 #
FIG. 2 BATTERY BOX WITHOUT FROST LINING & COVER
FIG 3 FROST LINING & COVER
NOTE: WHEN REQUIRED, SPECIFY ON THE REQ. 1 P14 CABLE RISER, 9" RUBBER CONDUIT & 2 CLAMPS.

CONCRETE = 4.54 CU. FT. = 0.17 CU. YDS. = 680 LBS.
REINFORCING BARS = 65 "

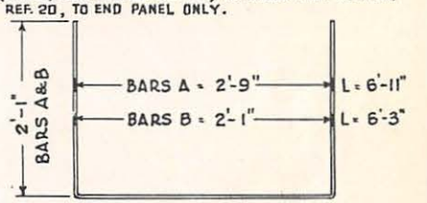
SPECIFICATIONS

BATTERY BOX.-
TO BE BUILT OF 3500# CONCRETE REINFORCED WITH ⅜"ø BARS OF STRUCTURAL GRADE STEEL, AS SHOWN. MAX. SIZE OF AGGREGATE ½"
MATERIAL AND WORKMANSHIP TO CONFORM TO "B.&M. SPECIFICATIONS FOR CONCRETE, PLAIN AND REINFORCED."

FLOOR -
SUPPORTS AND SLATS TO BE OF FINISHED SPRUCE. NAILS TO BE GALVANIZED.

FROST LINING & COVER-
COVER, CLEATS, HANDLE AND POSTS TO BE OF FINISHED SPRUCE. SIDES AND END PANELS TO BE OF ¼" CELOTEX UTILITY BOARD, (OR EQUAL) PAINTED ONE COAT OF ASPHALT PAINT. NAILS TO BE GALVANIZED.
LINING & COVER TO BE APPLIED FOR ALL PRIMARY BATTERIES.

NOTE A: IN ASSEMBLING FROST LINING DO NOT NAIL END PANEL (REF. 14, TERMINAL BOARD END) TO SIDES. NAIL CLEATS, REF. 20, TO END PANEL ONLY.



BENDING DIAGRAM
BARS A & B

BILL OF REINFORCING BARS

MARK	SIZE	LENGTH	NO	DESCRIPTION
A	⅜"ø	6'-11"	7	BENT-SEE ABOVE
B	⅜"ø	6'-3"	7	" " "
C	⅜"ø	2'-9"	12	STRAIGHT
D	⅜"ø	2'-1"	12	"

BOSTON AND MAINE R.R.

STANDARD

6 CELL BATTERY BOX

RECTANGULAR TYPE
WITH FROST PROTECTION

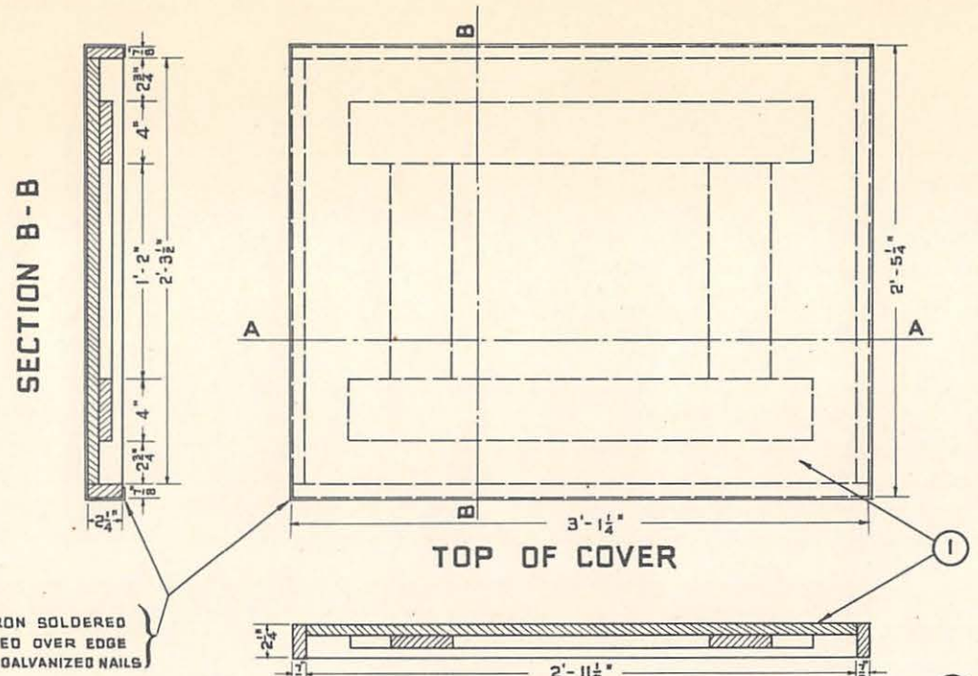
APPROVED:

J.F. Mullen
ENGINEER OF SIGNALS & TELEGRAPH

W.T. Cummings
CHIEF ENGINEER

PLAN	
DRAWN BY R·B·H	
CHECKED W.W.H.	
CORRECT C.M.F.	
ISSUE	DATE
A	3-14-42

P28
A



REF.	MATERIAL	REQ'D
1	COVER ¾" FIR SHEATHING 2'-3⅛" × 2'-11⅛"	1
2	CLEATS ¾" × 4" × 30" SPRUCE	2
3	CLEATS ¾" × 4" × 14" "	2
4	SIDES ⅞" × 2¼" × 3'-1¼" "	2
5	ENDS ⅞" × 2¼" × 2'-3½" "	2
	1¼" - #12 ROUND HEAD SCREWS	4 OZ.
	22 GUAGE SHEET IRON 35½" × 43½"	

BOSTON AND MAINE R.R.

STANDARD
6 CELL BATTERY BOX COVER

APPROVED

ENGINEER OF SIGNALS & TELEGRAPH

CHIEF ENGINEER

PLAN	
DRAWN J.L.A.	
CHECKED F.J.F.	
CORRECT J.J.R. C.M.T.	
ISSUE	DATE
A	4-26-34.
B	6-4-34.

B NOTE ON U&E MACHINE SCREW

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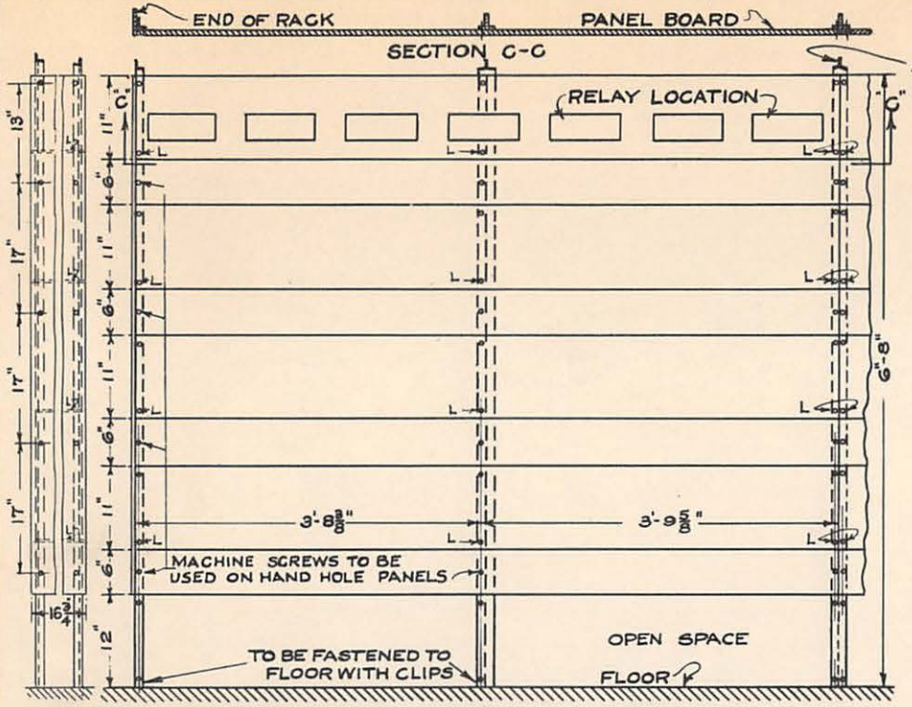
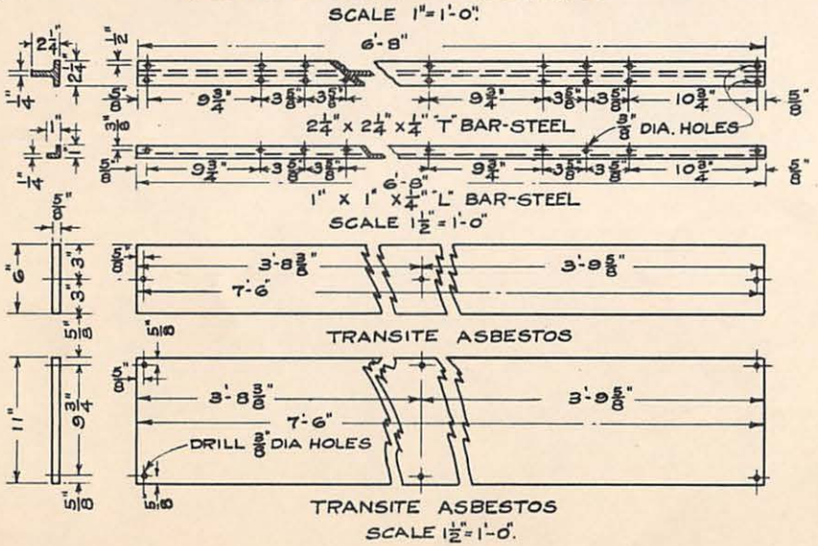
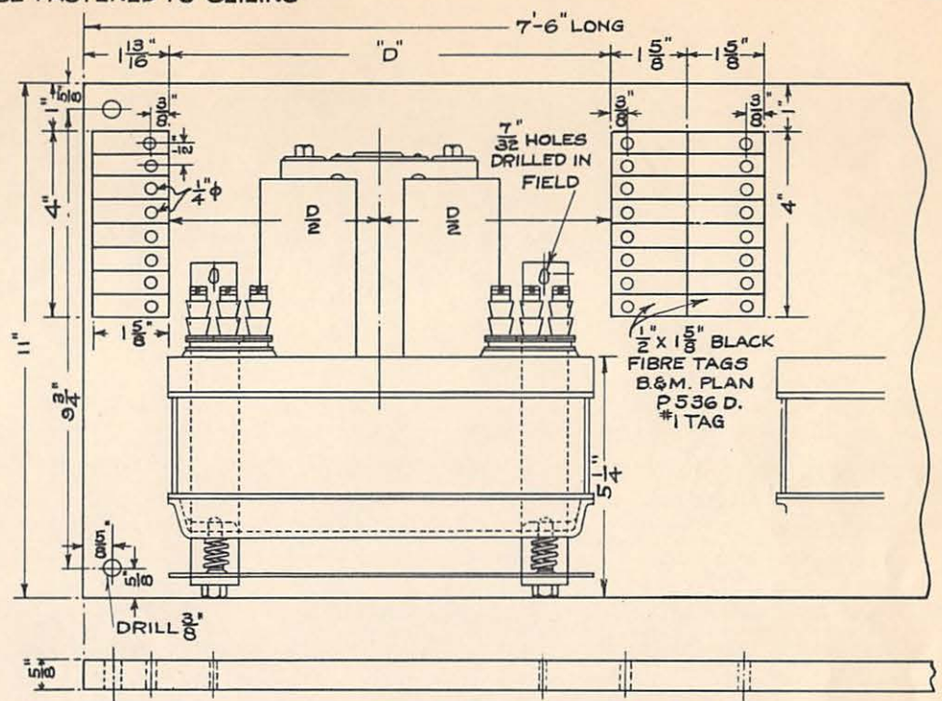


RELAY RACK ASSEMBLY SECTION "A"
SCALE 1"=1'-0"

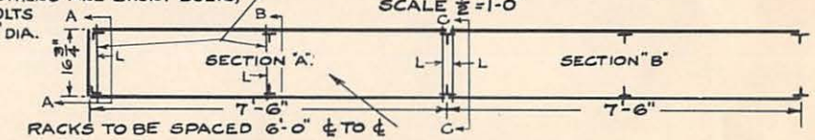


NOTES :-
LENGTH OF ANGLE & TEE BARS TO SUIT HEIGHT OF CEILING AND MUST BE SECURELY FASTENED AT FLOOR AND CEILING TO MAKE RELAY RACK RIGID. RACKS TO BE SPACED 6'-0" ON CENTERS. ALL BOARDS TO BE FURNISHED DRILLED EXCEPT AS NOTED. WIRE HOLES AT TAGS TO BE OMITTED WHEN DETACHABLE RELAYS ARE USED.

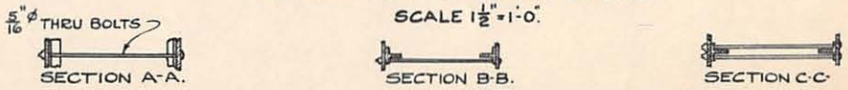

ANGLE & TEE-BARS TO BE FASTENED TO CEILING
7'-6" LONG
"D"
7" 32 HOLES DRILLED IN FIELD
1" x 1 5/8" BLACK FIBRE TAGS B&M. PLAN P 536 D. #1 TAG
DRILL 3/8"

DETAIL FOR MOUNTING RELAYS
SCALE 1"=1'-0"

BOLTS MARKED "L" ARE LONG BOLTS ALL OTHERS ARE SHORT BOLTS, SHORT BOLTS 1 1/4" x 5/16" DIA.



GENERAL PLAN OF RELAY RACKS
SCALE 1 1/2"=1'-0".



-NOTES-
D = 9 17/32" FOR THE TWO END RELAYS.
D = 9 5/16" FOR THE OTHER FIVE RELAYS
ALL HOLES TO BE DRILLED EXCEPT AS NOTED FOR RELAY MOUNTING
TAGS TO BE CEMENTED IN PLACE AS SHOWN. ← ?
BOARDS TO BE BLACK SANDED FINISH ON FRONT SIDE.
FIBRE INSULATING TUBES SHALL BE PLACED OVER LONG BOLTS "L" FOR SUPPORTING WIRES.

BOSTON AND MAINE R.R.

STANDARD RELAY RACK

TOWER ?
NOT HOUSES

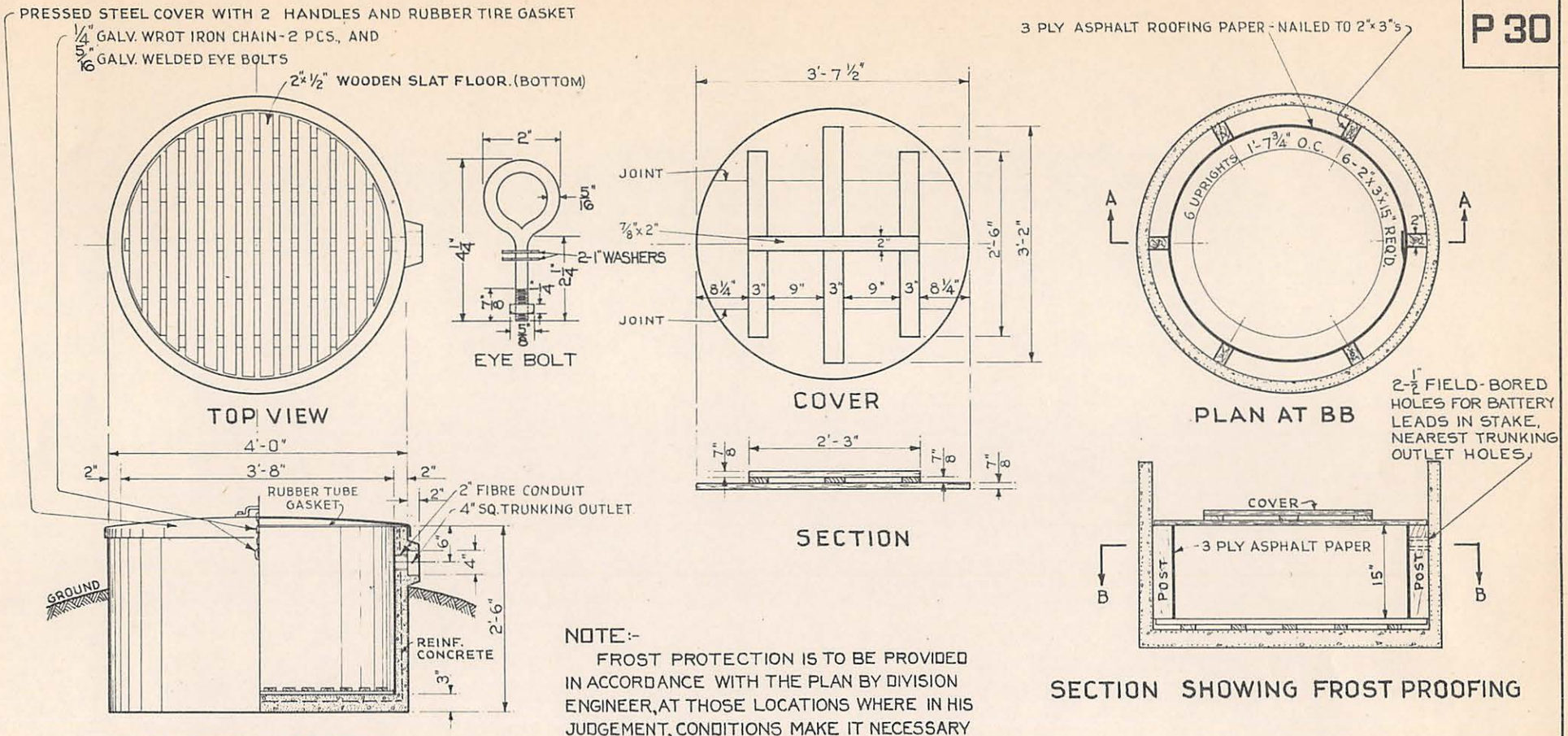
APPROVED
SIGNAL ENGINEER.
F.J. Fifield
ENGINEER M. OF W.

CHIEF ENGINEER.

PLAN	
DRAWN R.W.H.	
CHECKED E.R.M.	
CORRECT J.J.R.	
ISSUE	DATE
A	10-20-30
B	1-5-31

-B-EYE BOLT

P 30



NOTE:-

FROST PROTECTION IS TO BE PROVIDED IN ACCORDANCE WITH THE PLAN BY DIVISION ENGINEER, AT THOSE LOCATIONS WHERE IN HIS JUDGEMENT, CONDITIONS MAKE IT NECESSARY TO AFFORD BATTERIES ADDITIONAL PROTECTION.

SECTION SHOWING FROST PROOFING

BILL OF MATERIAL NEEDED FOR FROST PROOFING

POSTS - 6 PIECES WOOD 2"x3"x15" LONG.

CLEATS - 2 PIECES WOOD 1"x3"x30" LONG
1 PIECE " 1"x3"x38" " & 1-7/8"x2"x27"

COVER - 4 PIECES 7/8" PLANED AND GROOVED BOARDS TO MAKE 3'-7 1/2" CIRCLE.

ROOFING - ASPHALT PAPER
1 PIECE 15" x 10'-0" LONG.

METHOD OF FROST PROOFING

SPACE 15" POSTS ON ASPHALT PAPER AND NAIL WITH GALVANIZED ROOFING NAILS.

SET POSTS WITH PAPER IN BATTERY BOX.

SET BATTERIES AGAINST PAPER.

PUT ON COVER.

SET BOX TO GROUND LINE SHOWN WHEN POSSIBLE.

BOSTON AND MAINE R.R.

STANDARD
24 CELL BATTERY BOX
WITH FROST PROTECTION

APPROVED

H. F. Field
ENGINEER M. OF W.

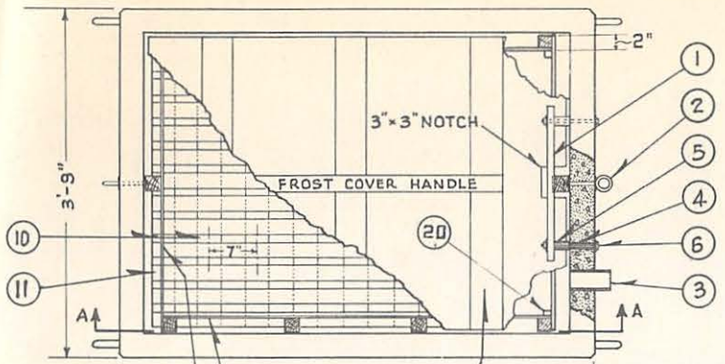
W. W. Scott
SIGNAL ENGINEER

W. Backes
CHIEF ENGINEER

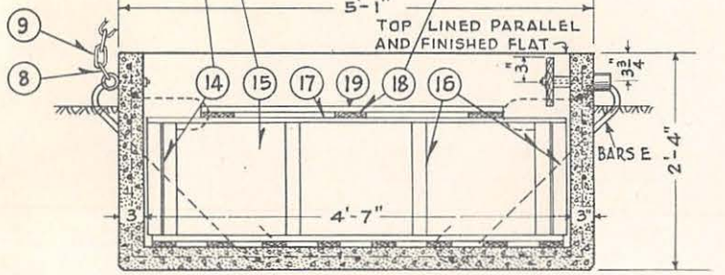
PLAN	
DRAWN	H.A.R.
CHECKED	[illegible]
CORRECT	C.M.F.

ISSUE	DATE
A	7-22-37
B	12-8-38
C	3-14-42

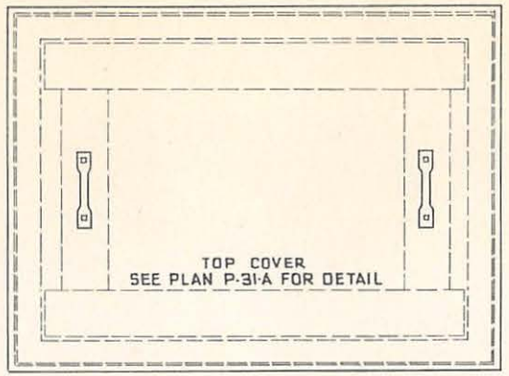
B - REDRAWN
C - COVER CHANGE & ADD CLEAT 20



TOP VIEW
(COVER REMOVED)

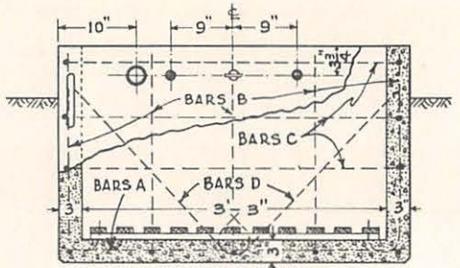


SECTION A-A
(SHOWING FROST LINING & COVER)



TOP VIEW WITH COVER

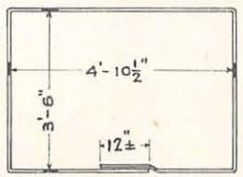
CHAMFER ALL OUTSIDE CORNERS EXCEPT TOP.



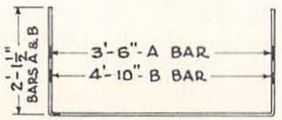
END & SECTION
(FROST LINING NOT SHOWN)

REF.	ACCESSORIES FOR BOX	REQ.
1	TERMINAL BOARD ¾" × 6" × 20" WHITEWOOD	1
2	GALV. EYEBOLT COMP. ⅜ø × 5½" LONG OVERALL - 1½" O.D. EYE.	2
3	DUCT. 2" GALV. PIPE 5" LONG	1
4	SLEEVE ½" " " 3" "	2
5	SPACER 1" " " 2" "	2
6	MACH. BOLT - GALV. ⅜" × 6½"	2
8	SPLIT LINK - ¼" BLACK IRON	1
9	COMMON CHAIN - ¼" BLACK IRON - 6½" FT. LONG	1
10	FLOOR SUPPORT ¾" × 3" × 3'-1"	8
11	FLOOR SLAT ¾" × 2" × 4'-5"	11
	FROST LINING & COVER (SEE NOTE A)	
14	END PANEL ¼" × 15" × 3'-2" CELOTEX UTILITY BOARD	2
15	SIDE " ¼" × 15" × 4'-2" " " "	2
16	POST 1¾" × 1¾" × 15" SPRUCE	10
17	FROST COVER ¾" SPRUCE BOARDING 3'-2" × 4'-6"	1
18	CLEAT ¾" × 4" × 3'-2"	3
19	FROST COVER HANDLE ¾" × 2" × 3'-2"	1
20	CLEAT ¾" × ¾" × 15" SPRUCE	2

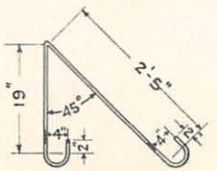
ORDERING INFORMATION
FIG. 1 BATTERY BOX COMPLETE - GROSS WT. 2330 LBS.
FIG. 2 BATTERY BOX WITHOUT FROST LINING & COVER
FIG. 3 FROST LINING & COVER
NOTE: - WHEN REQUIRED, SPECIFY ON THE REQ. 1 P14 CABLE RISER, 9" RUBBER CONDUIT & 2 CLAMPS



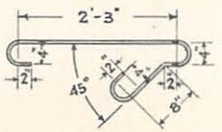
BAR C



BARS A & B



BAR D



BAR E
¾"ø SMOOTH IRON BAR

NOTE: ALL BAR DIMENSIONS ARE TO CTR. OF BAR.

BILL OF REINFORCING BARS

MARK	SIZE	LENGTH	REQ.	DESCRIPTION
A	½"ø	7'-9"	3	SEE SKETCH
B	½"ø	9'-1"	5	" "
C	½"ø	18'-0"	3	" "
D	½"ø	5'-6"	4	" "
E	¾"ø	5'-0"	4	" "

NOTE:
CONCRETE 13.43 CU. FT = 2015 LBS.
REINFORCING BARS = 135 LBS.

SPECIFICATIONS

BATTERY BOX -
TO BE BUILT OF 3000# CONCRETE REINFORCED WITH ½"ø BARS OF STRUCTURAL GRADE STEEL AS SHOWN. MAX. SIZE OF AGGREGATE ¾".
MATERIAL AND WORKMANSHIP TO CONFORM TO "B. & M. SPECIFICATIONS FOR CONCRETE, PLAIN AND REINFORCED."

FLOOR -
SUPPORTS AND SLATS TO BE OF FINISHED SPRUCE NAILS TO BE GALVANIZED AND CLINCHED.

FROST LINING & COVER -
COVER, CLEATS, HANDLE, AND POSTS TO BE OF FINISHED SPRUCE. SIDE AND END PANELS TO BE OF ¼" CELOTEX UTILITY BOARD, (OR EQUAL) PAINTED ONE COAT OF ASPHALT PAINT. NAILS TO BE GALVANIZED AND CLINCHED IN COVER.
LINING & COVER TO BE APPLIED FOR ALL PRIMARY BATTERIES.

APPLY 2 COATS ASPHALT PAINT TO CONCRETE FLOOR AFTER CONCRETE IS DRY.

BATTERY CAPACITY -
24 500 AH - AAR 10532
20 1000 AH - AAR 10535
24 DMG 09
36 DMG 07 - KXHS 7

NOTE A: IN ASSEMBLING FROST LINING DO NOT NAIL END PANEL, (REF. 14, TERMINAL BOARD END) TO SIDES. NAIL CLEATS REF. 20, TO END PANEL ONLY.

BOSTON AND MAINE R.R.

STANDARD

24 CELL BATTERY BOX

RECTANGULAR TYPE
WITH FROST PROTECTION

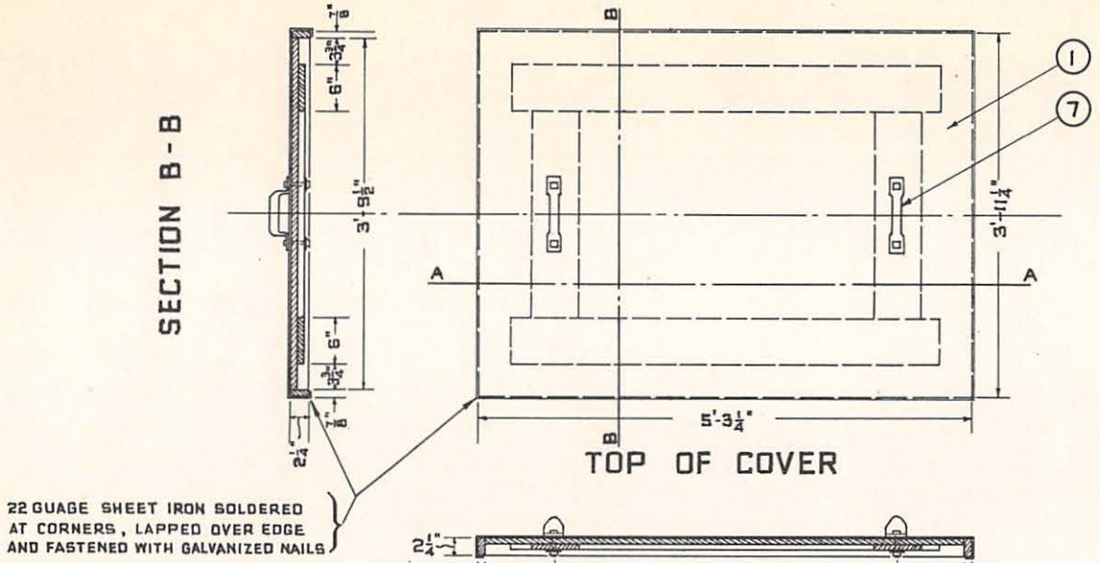
APPROVED:

ENGINEER OF SIGNALS & TELEGRAPH

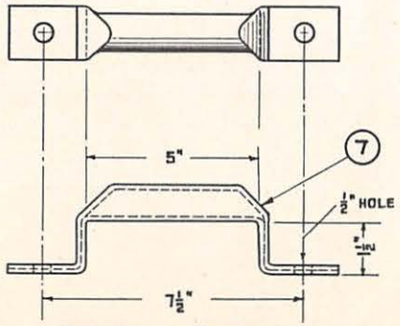
CHIEF ENGINEER

PLAN	
DRAWN BY	R·B·H·
CHECKED	W.W.H.
CORRECT	E.M.F.
ISSUE	DATE
A	3-14-42

P31 A

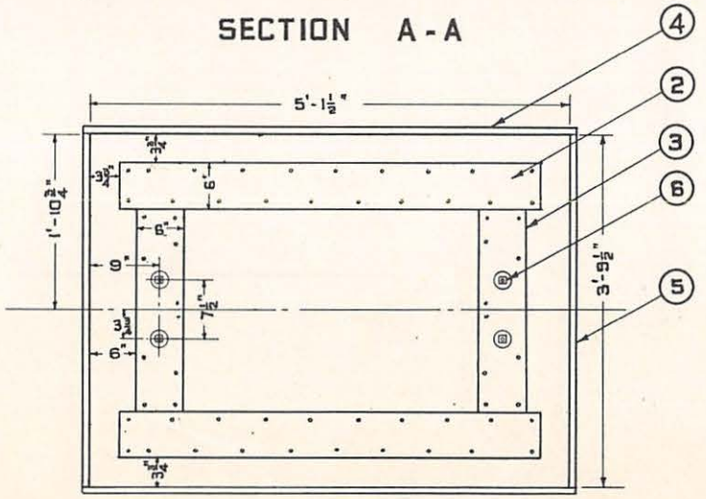

SECTION B-B
TOP OF COVER
22 GUAGE SHEET IRON SOLDERED AT CORNERS, LAPPED OVER EDGE AND FASTENED WITH GALVANIZED NAILS
SECTION A-A

REF.	MATERIAL	REQ'D
1	COVER - ¾" FIR SHEATHING 3'-9½" × 5'-1½"	1
2	CLEATS - ¾" × 6" × 54" SPRUCE	2
3	CLEATS - ¾" × 6" × 28" "	2
4	SIDES ⅞" × 2¾" × 63¼" "	2
5	ENDS ⅞" × 2¼" × 45½" "	2
6	⅜" SQ. HEAD BOLT 2" LONG WITH NUT AND WASHER	4
7	HANDLE	2
	1¼" - #12 ROUND HEAD SCREWS	5 DOZ.
	22 GUAGE SHEET IRON 53½" × 69½"	



COVER HANDLE

FORM FROM 12" LENGTH OF ¾" PIPE



BOTTOM OF COVER

BOSTON AND MAINE R.R.

STANDARD

24 CELL BATTERY BOX COVER

APPROVED

ENGINEER OF SIGNALS & TELEGRAPH

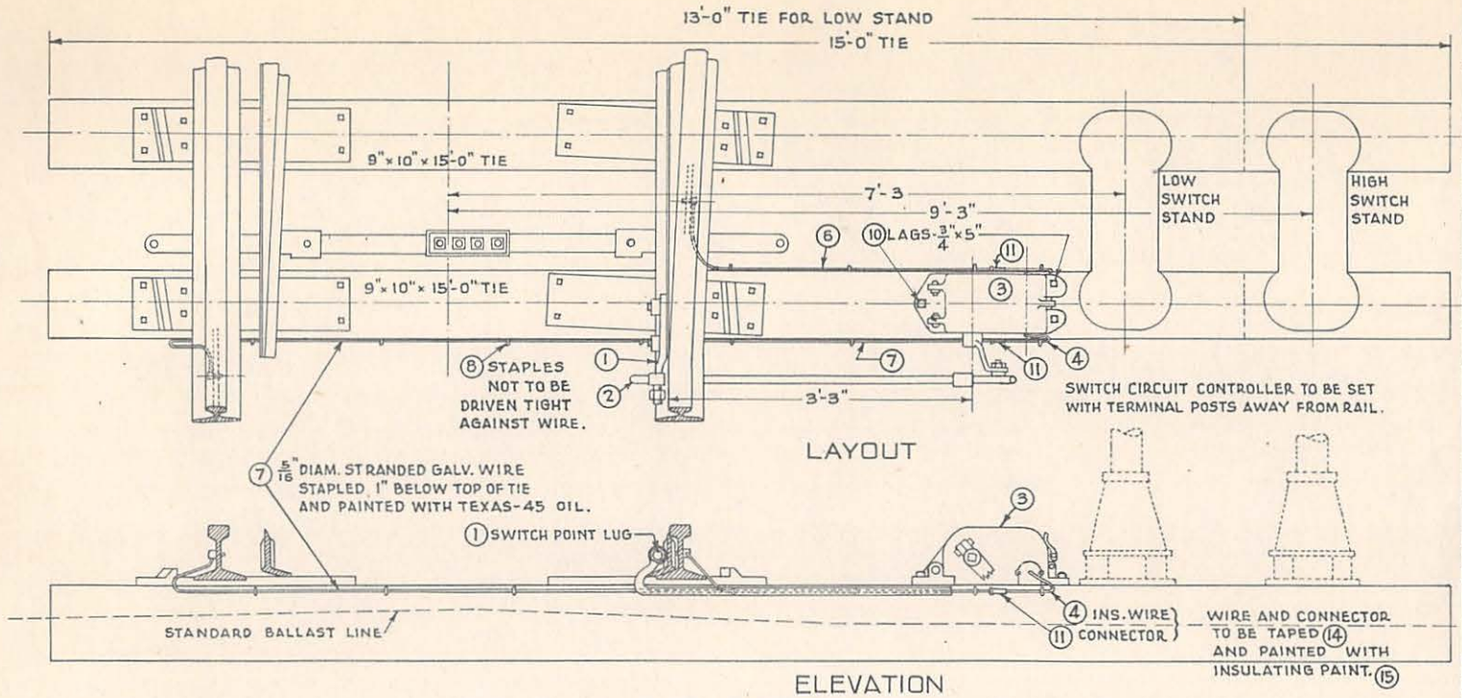
CHIEF ENGINEER

PLAN	
DRAWN	H.A.R.
CHECKED	C.P.B.
CORRECT	C.M.F.

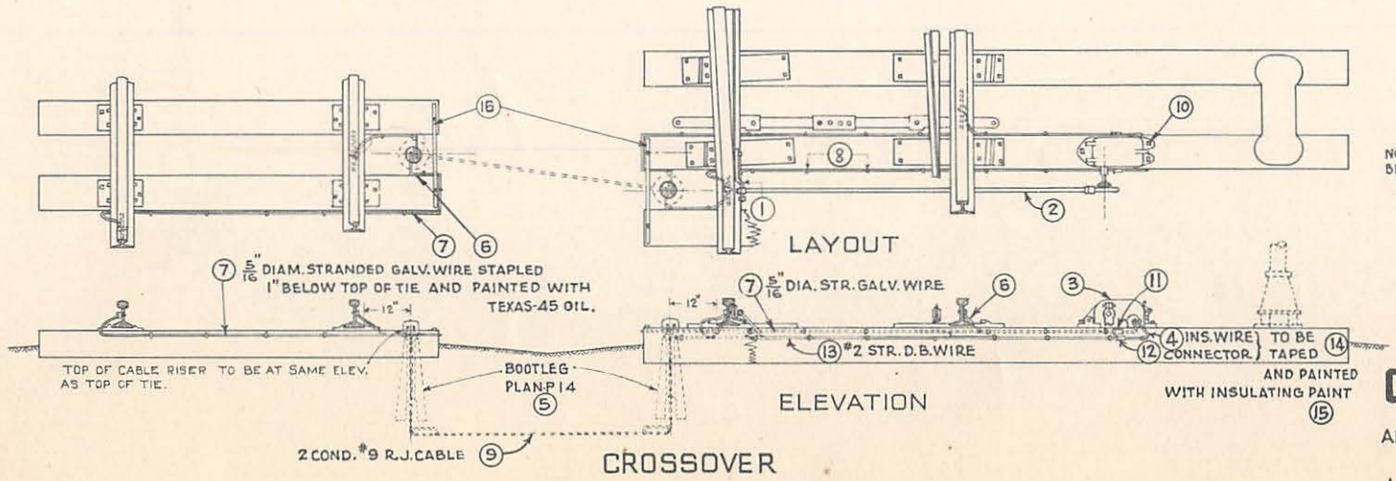
ISSUE	DATE
D	2-1-39
E	3-14-42
F	12-13-45

D = REDRAWN
E = SWITCH CIRCUIT CONT. ROD LAYOUT REVISED, AND NOTE ADDED
F = LOC. OF SIGNAL BOOTLEGS REVISED.

P33



SINGLE SWITCH



CROSSOVER

REFERENCE LIST

ORDER REF	NAME	QUANTITY	DESCRIPTION
	SINGLE SWITCH		
1	SWITCH POINT LUG	1	
2	SWITCH CIRCUIT CONTROLLER ROD	1	LONG OR SHORT
3	SWITCH CIRCUIT CONTROLLER WITH 2 WIRE OUTLET PLATES	1	MODEL 7 OR STYLE U-5
4	#9 INSULATED WIRE	4 FT.	
6	5/16" STR. GALV. WIRE 4'-2"	1	WITH PLUG ON ONE END
7	" " " " 10'-4"	1	" " " "
8	COPPERWELD STAPLE	12	1 3/4" x 3/8" x .144
10	LAG SCREW 3/4" x 5"	3	
11	TWO-WAY REDUCING CONNECTOR (SOLDERLESS)	2	FOR 5/16" STR. WIRE AND #9 SOLID WIRE
14	TAPE	1/2 ROLL	FRICTION
15	INSULATING PAINT		
	CROSSOVER *		
1	SWITCH POINT LUG	1	
2	SWITCH CIRCUIT CONTROLLER ROD	1	LONG OR SHORT
3	SWITCH CIRCUIT CONTROLLER WITH 2 WIRE OUTLET PLATES	1	MODEL 7 OR STYLE U-5
4	#9 INSULATED WIRE	8 FT.	
5	CONC. BOOTLEG-COMPLETE	2	PLAN P 14
6	5/16" STR. GALV. WIRE 4'-2"	2	WITH PLUG ON ONE END
7	" " " " 10'-4"	2	" " " "
8	COPPERWELD STAPLE	37	1 3/4" x 3/8" x .144
9	2 COND. #9 R.J. CABLE	12 FT.	(LENGTH MAY VARY)
10	LAG SCREW 3/4" x 5"	3	
11	TWO-WAY REDUCING CONNECTOR (SOLDERLESS)	2	FOR 5/16" STR. WIRE AND #9 SOLID WIRE
12	TWO-WAY REDUCING CONNECTOR (SOLDERLESS)	2	FOR #2 STR. WIRE AND #9 SOLID WIRE
13	#2 STRANDED D.B. WIRE	28 FT.	
14	TAPE	1/2 ROLL	FRICTION
15	INSULATING PAINT		
16	BLACK IRON STRAP	1	1" x 1/2" x 2'-3"

* THIS LIST IS FOR ONE END ONLY. FOR COMPLETE CROSSOVER BETWEEN MAIN TRACKS, DOUBLE THIS LIST.

NOTE:- SWITCH CIRCUIT CONTROLLER ROD (E) TO BE ATTACHED TO NORMALLY CLOSED POINT OF SWITCH

BOSTON AND MAINE R.R.

STANDARD SWITCH CIRCUIT CONTROLLER LAYOUT

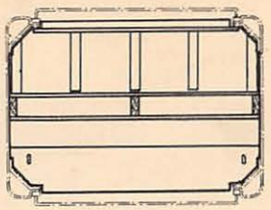
APPROVED:

ENGINEER OF SIGNALS & TELEGRAPH — CHIEF ENGINEER

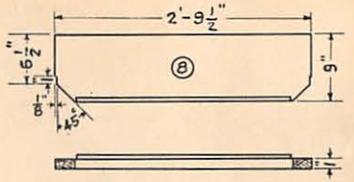
PLAN	
DRAWN BY F.B.F. H.A.R.	
CHECKED BY	
CORRECT E.M.F.	
ISSUE	DATE
B	11-15-38

B - NEW DESIGN

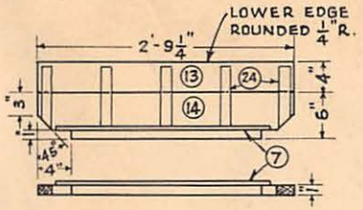
P34



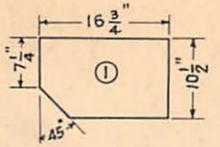
TOP VIEW



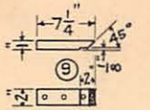
BATTERY SHELF



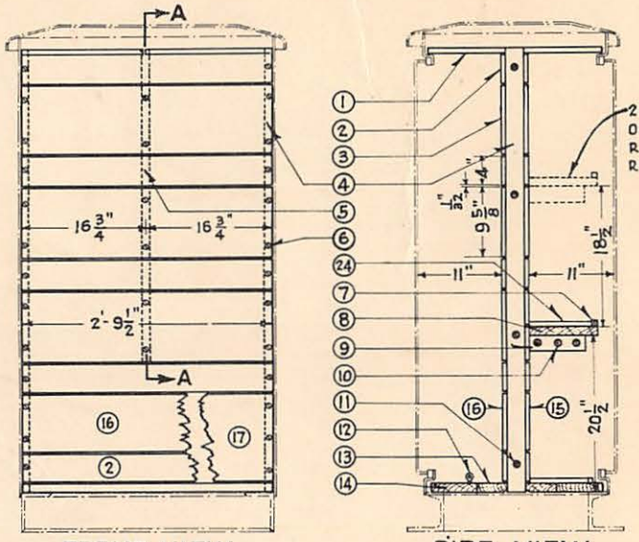
FLOOR
(TWO PIECES)



CEILING PANEL



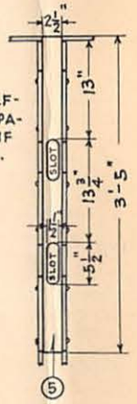
SHELF SUPPORT



FRONT VIEW SIDE VIEW

FIG.1 WITH⑯-8" TERMINAL PANEL

FIG.1A WITH⑰-12" TERMINAL PANEL



SECTION A-A
MIDDLE SPACER

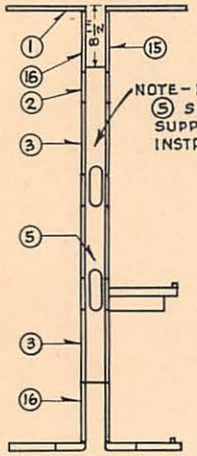


FIG. 2
WITH⑯TERMINAL PANEL ABOVE AND BELOW

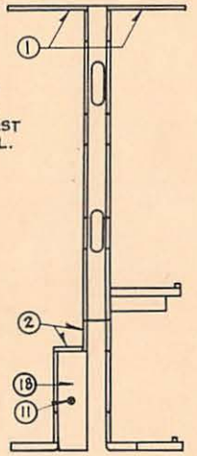


FIG.3 = FIG.1 WITH SLACK BOX
FIG.3A = FIG.1A WITH SLACK BOX

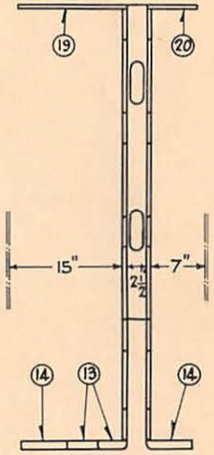


FIG. 4
SHELVING SET BACK 4" FROM MIDDLE FOR USE WITH LARGE APPARATUS

FIG. 4A
AS ABOVE WITH 12" TERMINAL PANEL

SHELVING MATERIAL SCHEDULE FOR APPARATUS CASES										
REF.	MATERIALS	FIG.1	FIG.1A	FIG.2	FIG.3	FIG.3A	FIG.4	FIG.4A		2ND SHELF IF SPECIFIED
1	CEILING PANEL ½"×10½"×16¾" PLYWOOD	4	4	4	4	4				
2	HAND HOLE PANEL ½"×4"×2'-9½" "	10	9	6	11	10	10	9		
3	INSTRUMENT PANEL ½"×9⅝"×2'-9½" "	6	6	6	6	6	6	6		
4	SIDE CLEAT 1"×2½"×4'-10½" WHITEWOOD *	2	2	2	2	2	2	2		
5	MIDDLE SPACER 1"×2½"×3'-5" "	1	1	1	1	1	1	1		
6	GALV. R.H. WOOD SCREW #12 - 1½"	68	68	68	70	70	64	64		4
7	RETAINING CLEAT ⅝" SQ. × 2'-4" WHITEWOOD *	2	2	2	2	2				1
8	BATTERY SHELF - AS SHOWN "	1	1	1	1	1				1
9	SHELF SUPPORT " "	2	2	2	2	2				2
10	CARRIAGE BOLT - ¼" × 1½" GALV.	6	6	6	6	6				6
11	STOVE BOLT - ¼" × 1½" - GALV. R.H.	8	8	8	10	10	8	8		
12	SCREW EYE - ½" EYE GALV.	2	2	2	2	2	2	2		
13	FLOOR BOARD - AS SHOWN - WHITEWOOD *	2	2	2	1	1	2	2		
14	FLOOR BOARD - " " "	2	2	2	2	2	2	2		
15	FILLER PANEL - ½" × 8" × 2'-9½" - PLYWOOD	1	1	2	1	1	1	1		
16	TERMINAL PANEL ½" × 8" × 2'-9½" "	1		2	1		1			
17	TERMINAL PANEL ½" × 12" × 2'-9½" "		1			1		1		
18	CLEAT - 1" × 4" × 13⅛" WHITEWOOD *				2	2				
19	CEILING PANEL - ½" × 14½" × 16¾" PLYWOOD						2	2		
20	CEILING PANEL - ½" × 6½" × 16¾" "						2	2		
24	BATTERY CELL SPACERS ½" × 1" × 8" "	AS REQUIRED - DEPENDING ON NUMBER OF CELLS USED								
25	6D FINISH NAILS	4 OZ.	4 OZ.	4 OZ	4 OZ	4 OZ.				2 OZ.
	* ALSO KNOWN AS POPLAR									

NOTES -

PLYWOOD TO BE 5 PLY STRONGLY GRAINED FIR WITH SANDED SURFACE. ALL WOOD TO BE FINISHED WITH TWO COATS OF ACID RESISTING VARNISH. BACK EDGES OF INSTRUMENT PANELS TO BE ROUNDED ⅛" R.

FIGS. 2 TO 4A SHOW VARIOUS SHELVING ARRANGEMENTS.

BOLTS TO BE FURNISHED WITH WASHER & SQUARE NUT.

B2500-1
" -2

BOSTON AND MAINE R.R.

STANDARD SHELVING

FOR HIGH DOUBLE DOOR RELAY CASE

APPROVED:

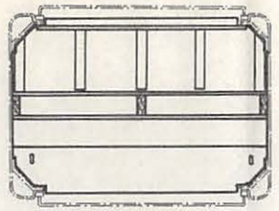
ENGINEER OF SIGNALS AND TELEGRAPH

CHIEF ENGINEER

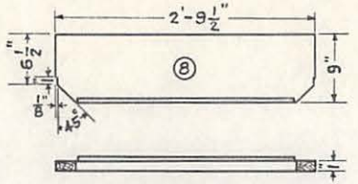
PLAN	
DRAWN BY F.B.F. H.A.R.	
CHECKED BY	
CORRECT C.M.F.	
ISSUE	DATE
B	11-15-38
C	11-4-58

B - NEW DESIGN
C - NOTES REVISED

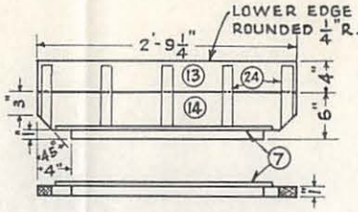
P34



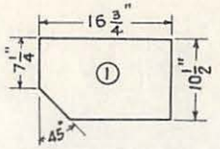
TOP VIEW



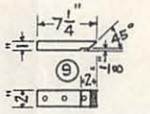
BATTERY SHELF



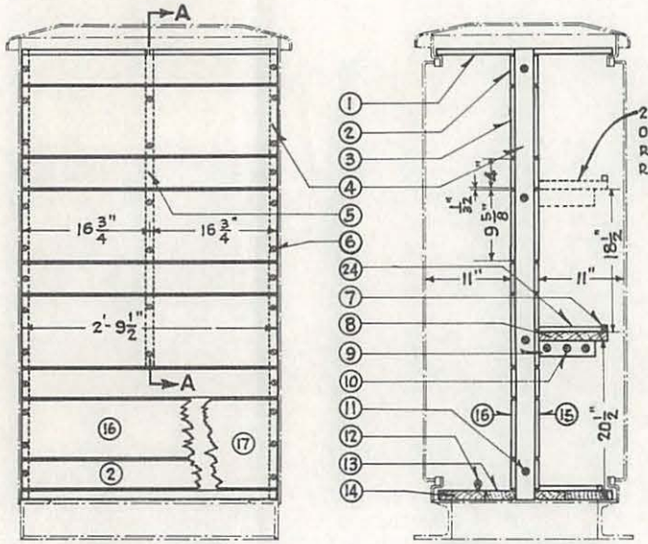
FLOOR
(TWO PIECES)



CEILING PANEL

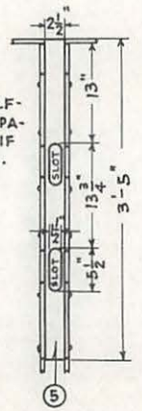


SHELF SUPPORT



FRONT VIEW SIDE VIEW

FIG. 1 WITH ⑯ - 8" TERMINAL PANEL
FIG. 1A WITH ⑰ - 12" TERMINAL PANEL



SECTION A-A
MIDDLE SPACER

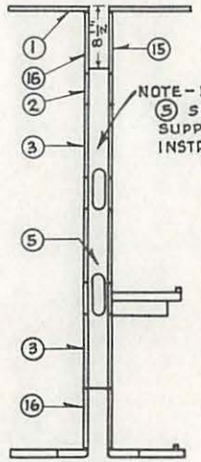


FIG. 2
WITH ⑯ TERMINAL PANEL ABOVE AND BELOW

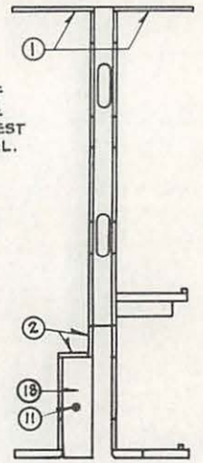


FIG. 3 = FIG. 1 WITH SLACK BOX
FIG. 3A = FIG. 1A WITH SLACK BOX

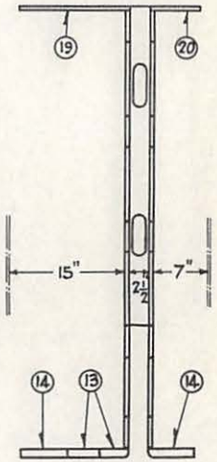


FIG. 4
SHELVING SET BACK 4" FROM MIDDLE FOR USE WITH LARGE APPARATUS
FIG. 4A
AS ABOVE WITH 12" TERMINAL PANEL

SHELVING MATERIAL SCHEDULE FOR APPARATUS CASES

REF.	MATERIALS	FIG. 1	FIG. 1A	FIG. 2	FIG. 3	FIG. 3A	FIG. 4	FIG. 4A		2ND SHELF IF SPECIFIED
1	CEILING PANEL ½" x 10½" x 16¾" PLYWOOD	4	4	4	4	4				
2	HAND HOLE PANEL ½" x 4" x 2'-9½" "	10	9	6	11	10	10	9		
3	INSTRUMENT PANEL ½" x 9⅝" x 2'-9½" "	6	6	6	6	6	6	6		
4	SIDE CLEAT 1" x 2½" x 4'-10½" WHITEWOOD *	2	2	2	2	2	2	2		
5	MIDDLE SPACER 1" x 2½" x 3'-5" "	1	1	1	1	1	1	1		
6	GALV. R.H. WOOD SCREW #12 - 1½"	68	68	68	70	70	64	64		4
7	RETAINING CLEAT ⅝" SQ. x 2'-4" WHITEWOOD*	2	2	2	2	2				1
8	BATTERY SHELF - AS SHOWN "	1	1	1	1	1				1
9	SHELF SUPPORT " " "	2	2	2	2	2				2
10	CARRIAGE BOLT - ¼" x 1½" GALV.	6	6	6	6	6				6
11	STOVE BOLT - ¼" x 1½" - GALV. R.H.	8	8	8	10	10	8	8		
12	SCREW EYE - ½" EYE GALV.	2	2	2	2	2	2	2		
13	FLOOR BOARD - AS SHOWN - WHITEWOOD *	2	2	2	1	1	2	2		
14	FLOOR BOARD - " " "	2	2	2	2	2	2	2		
15	FILLER PANEL - ½" x 8" x 2'-9½" - PLYWOOD	1	1	2	1	1	1	1		
16	TERMINAL PANEL ½" x 8" x 2'-9½" "	1		2	1		1			
17	TERMINAL PANEL ½" x 12" x 2'-9½" "		1			1		1		
18	CLEAT - 1" x 4" x 13⅞" WHITEWOOD *				2	2				
19	CEILING PANEL - ½" x 14½" x 16¾" PLYWOOD						2	2		
20	CEILING PANEL - ½" x 6½" x 16¾" "						2	2		
24	BATTERY CELL SPACERS ½" x 1" x 8" "	AS REQUIRED - DEPENDING ON NUMBER OF CELLS USED								
25	6D FINISH NAILS	4 OZ.	4 OZ.	4 OZ	4 OZ	4 OZ.				2 OZ.
	* ALSO KNOWN AS POPLAR									

NOTES -
PLYWOOD TO BE 5 PLY EXTERIOR FIR GRADE A-C.
ALL WOOD TO BE FINISHED WITH TWO COATS OF GOOD QUALITY LIGHT GRAY SEMI GLOSS PAINT.
BACK EDGES OF INSTRUMENT PANELS TO BE ROUNDED ⅛" R.

FIGS. 2 TO 4A SHOW VARIOUS SHELVING ARRANGEMENTS.

BOLTS TO BE FURNISHED WITH WASHER & SQUARE NUT.

BOSTON AND MAINE R.R.
STANDARD
SHELVING
FOR HIGH DOUBLE DOOR RELAY CASE

APPROVED:

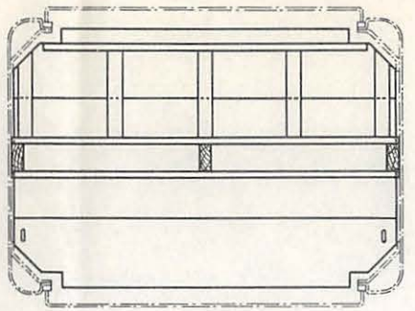
W. W. Hartzell
ENGINEER OF SIGNALS AND COMMUNICATIONS

F. J. Phillips
VICE PRESIDENT - ENGINEERING

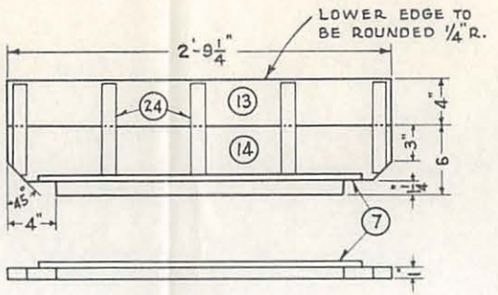
PLAN	
DRAWN BY	F.B.F. H.A.R.
CHECKED BY	
CORRECT	C.H.F.

ISSUE	DATE
B	11-15-38
C	11-4-58

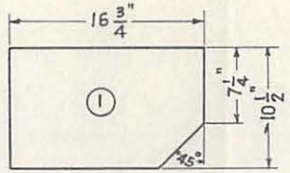
B - NEW DESIGN
C - NOTES REVISED



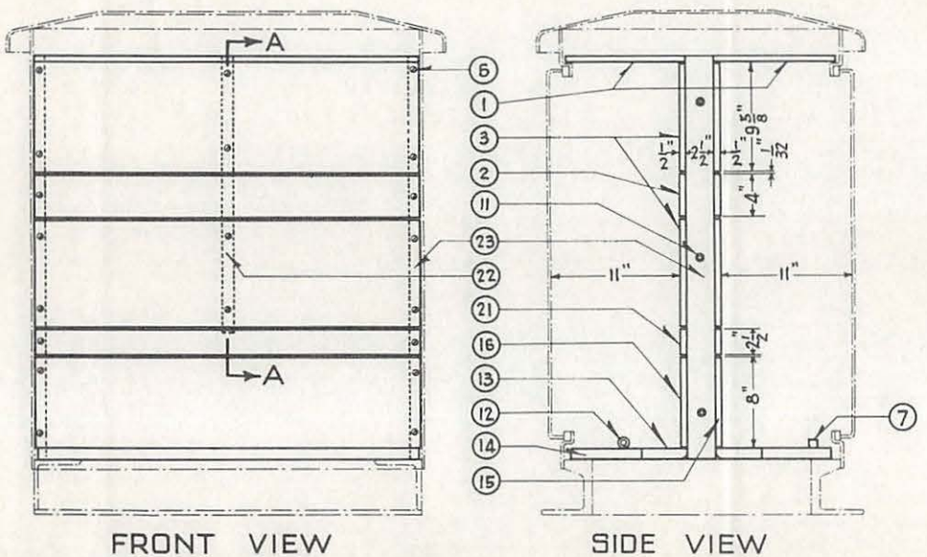
TOP VIEW



FLOOR
(TWO PIECES)



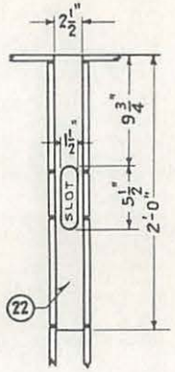
CEILING
PANEL



FRONT VIEW

SIDE VIEW

FIG. 1



SECTION
A-A
MIDDLE SPACER

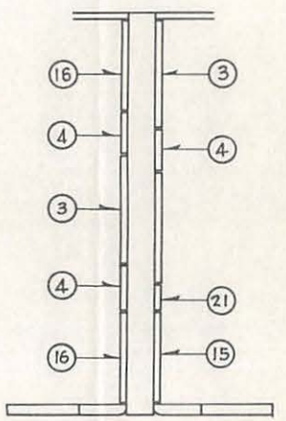


FIG. 2
WITH (16) TERMINAL PANEL
ABOVE AND BELOW

SHELVING MATERIAL SCHEDULE FOR APPARATUS CASES				
REF.	MATERIAL	FIG. 1	FIG. 2	
1	CEILING PANEL - AS SHOWN - PLYWOOD	4	4	
2	HAND HOLE PANEL - 1/2" x 4" x 2'-9 1/2" "	2	4	
3	INSTRUMENT PANEL - 1/2" x 9 5/8" x 2'-9 1/2" "	4	3	
6	GALV. R.H. WOOD SCREW - #12 - 1 1/2"	40	40	
7	RETAINING CLEAT - 5/8" SQ. x 2'-4" WHITEWOOD*	1	1	
11	STOVE BOLT - 1/4" x 1 1/2" GALV. - R.H.	6	6	
12	SCREW EYE - 1/2" EYE - GALV.	2	2	
13	FLOOR BOARD - AS SHOWN - WHITEWOOD*	2	2	
14	FLOOR BOARD - " " "	2	2	
15	FILLER PANEL - 1/2" x 8" x 2'-9 1/2" - PLYWOOD	1	1	
16	TERMINAL PANEL - 1/2" x 8" x 2'-9 1/2" "	1	2	
21	HAND HOLE PANEL - 1/2" x 2 1/2" x 2'-9 1/2" "	2	1	
22	MIDDLE SPACER - 1" x 2 1/2" x 2'-0" - WHITEWOOD*	1	1	
23	SIDE CLEAT - 1" x 2 1/2" x 2'-11 1/2" "	2	2	
24	BATTERY CELL SPACERS - 1/2" x 1 x 8" PLYWOOD	AS REQUIRED		
25	6D FINISH NAILS	2 OZ.	2 OZ.	
	* ALSO KNOWN AS POPLAR			

NOTES:
PLYWOOD TO BE 5 PLY EXTERIOR FIR GRADE A-C.
PANELS TO BE FINISHED WITH TWO COATS OF GOOD QUALITY LIGHT GRAY SEMI GLOSS PAINT.
BACK EDGES OF INSTRUMENT PANELS TO BE ROUNDED 1/8" RAD.
BOLTS TO BE FURNISHED WITH WASHER AND SQUARE NUT.
REF. NOS. OF PARTS AGREE WITH REF. NOS. OF SIMILAR PARTS ON PLAN P34.
FIG. 2 SHOWS OPTIONAL ARRANGEMENT.

BOSTON AND MAINE R.R.

STANDARD
SHELVING
FOR LOW DOUBLE DOOR RELAY CASE

APPROVED:

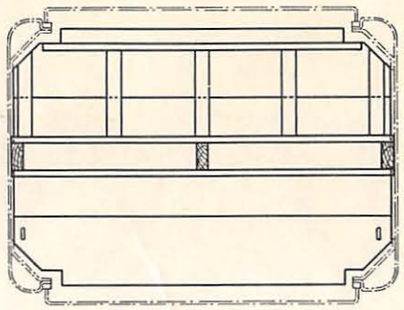
W. W. Hartsell
ENGINEER OF SIGNALS AND COMMUNICATIONS

L. P. Phillips
VICE PRESIDENT - ENGINEERING

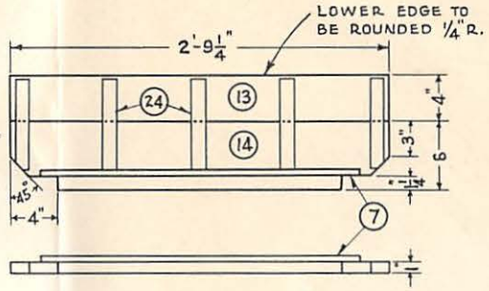
PLAN	
DRAWN BY F.B.F. H.A.R.	
CHECKED BY	
CORRECT E.M.F.	
ISSUE	DATE
B	11-15-38

B - NEW DESIGN

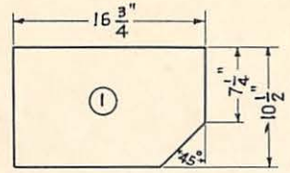
P36



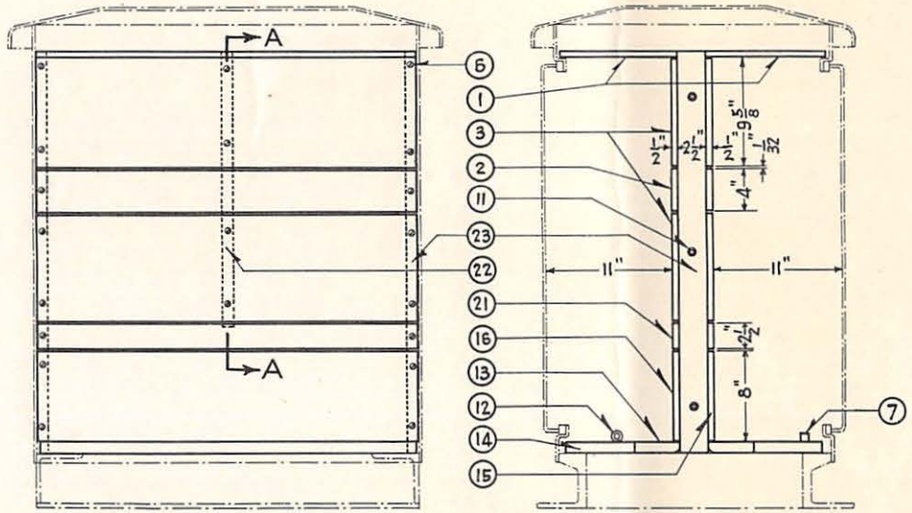
TOP VIEW



FLOOR
(TWO PIECES)

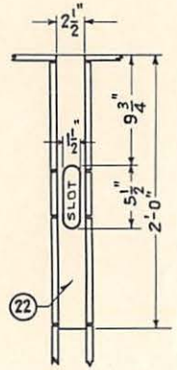


CEILING
PANEL



FRONT VIEW SIDE VIEW

FIG. 1



SECTION
A-A
MIDDLE SPACER

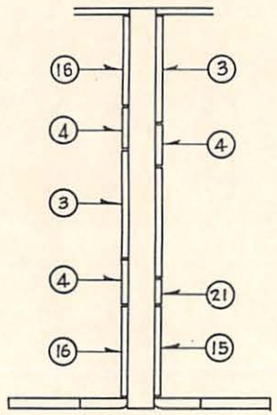


FIG. 2
WITH (16) TERMINAL PANEL
ABOVE AND BELOW

SHELVING MATERIAL SCHEDULE FOR APPARATUS CASES				
REF.	MATERIAL	FIG. 1	FIG. 2	
1	CEILING PANEL - AS SHOWN - PLYWOOD	4	4	
2	HAND HOLE PANEL-1/2" x 4" x 2'-9 1/2" "	2	4	
3	INSTRUMENT PANEL-1/2" x 9 5/8" x 2'-9 1/2" "	4	3	
6	GALV. R.H. WOOD SCREW - #12 - 1 1/2"	40	40	
7	RETAINING CLEAT-5/8" SQ. x 2'-4" WHITEWOOD*	1	1	
11	STOVE BOLT-1/4" x 1 1/2" GALV. - R.H.	6	6	
12	SCREW EYE - 1/2" EYE - GALV.	2	2	
13	FLOOR BOARD - AS SHOWN - WHITEWOOD*	2	2	
14	FLOOR BOARD - " " "	2	2	
15	FILLER PANEL-1/2" x 8" x 2'-9 1/2" - PLYWOOD	1	1	
16	TERMINAL PANEL-1/2" x 8" x 2'-9 1/2" "	1	2	
21	HAND HOLE PANEL-1/2" x 2 1/2" x 2'-9 1/2" "	2	1	
22	MIDDLE SPACER-1" x 2 1/2" x 2'-0" - WHITEWOOD*	1	1	
23	SIDE CLEAT - 1" x 2 1/2" x 2'-11 1/2" "	2	2	
24	BATTERY CELL SPACERS-1/2" x 1 x 8" PLYWOOD	AS REQUIRED		
25	6D FINISH NAILS	2 OZ.	2 OZ.	
	* ALSO KNOWN AS POPLAR			

NOTES:

PLYWOOD TO BE 5 PLY STRONGLY GRAINED FIR WITH SANDED SURFACE. PANELS TO BE FINISHED WITH TWO COATS OF ACID RESISTING VARNISH.

BACK EDGES OF INSTRUMENT PANELS TO BE ROUNDED 1/8" RAD.

BOLTS TO BE FURNISHED WITH WASHER AND SQUARE NUT.

REF. NOS. OF PARTS AGREE WITH REF. NOS. OF SIMILAR PARTS ON PLAN P34.

FIG. 2 SHOWS OPTIONAL ARRANGEMENT.

BOSTON AND MAINE R.R.

STANDARD SHELVING

FOR LOW DOUBLE DOOR RELAY CASE

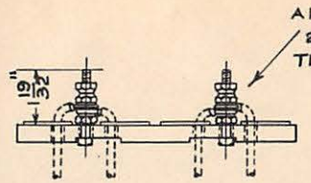
APPROVED:

ENGINEER OF SIGNALS AND TELEGRAPH

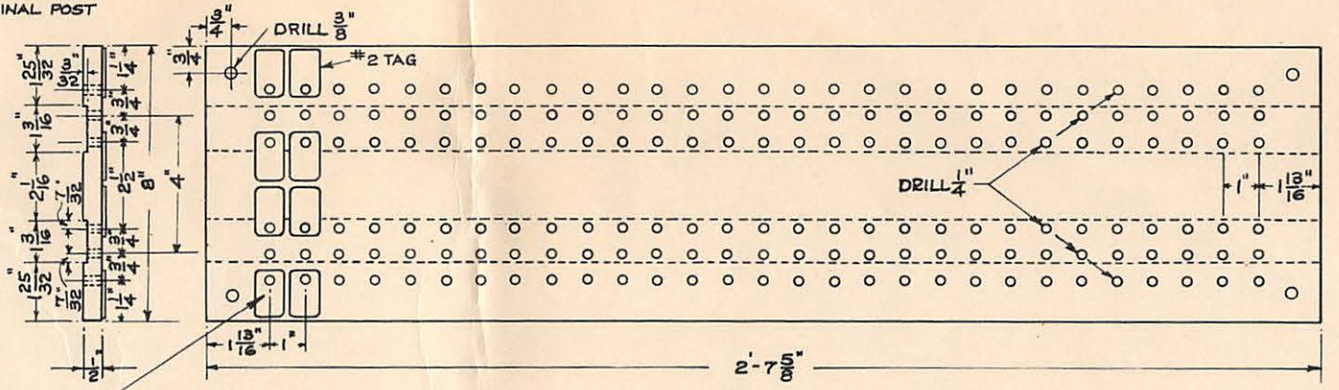
CHIEF ENGINEER

PLAN	
DRAWN J.L.A.	
CHECKED J.J.R.	
CORRECT E.M.F.	
ISSUE	DATE
A	4-26-34

P 38



APPLICATIONS TO TERMINAL BOARDS



DWG. P536D
BLACK FIBRE TAGS
TO BE CEMENTED IN PLACE

FIG.-A.
TERMINAL BOARD FOR APPARATUS CASE
SHOWN ON DRAWING P35 → NO STD DRAWING
SCALE 4 1/2" = 1'-0".

NOTE:- SIDE BOARDS TO BE BOLTED TO TERMINAL BOARD SUPPORTS

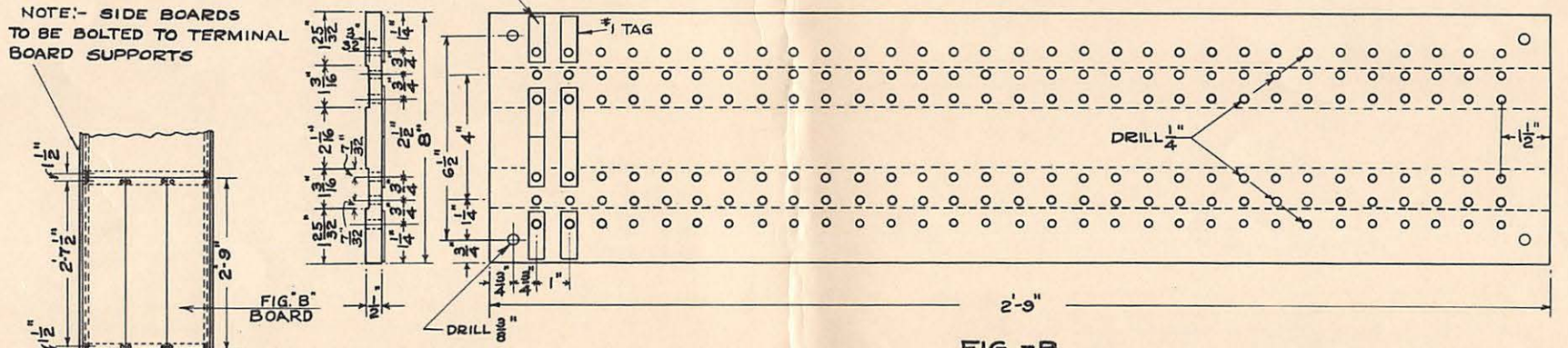
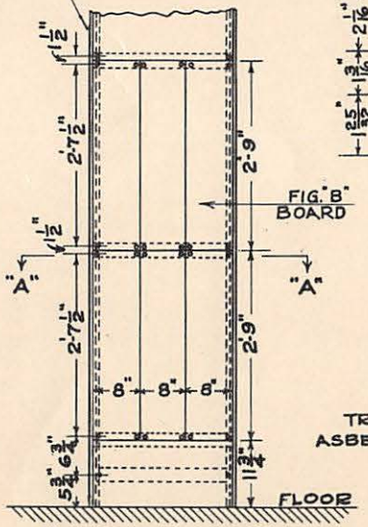
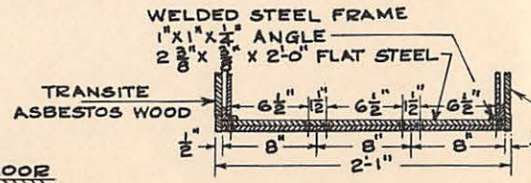


FIG.-B.
TERMINAL BOARD FOR TOWER & RELAY HOUSE
SCALE-4 1/2" = 1'-0".



TERMINAL BOARDS
FRONT VIEW
SCALE 3/4" = 1'-0"



SECTION A A.
SCALE 1 1/2" = 1'-0"

MATERIAL
EBONY ASBESTOS BOARDS

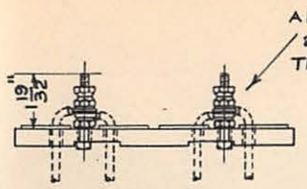
BOSTON AND MAINE R.R.
STANDARD
TERMINAL BOARDS

APPROVED
SIGNAL ENGINEER
H.F. Fifield
ENGINEER M.OF W.

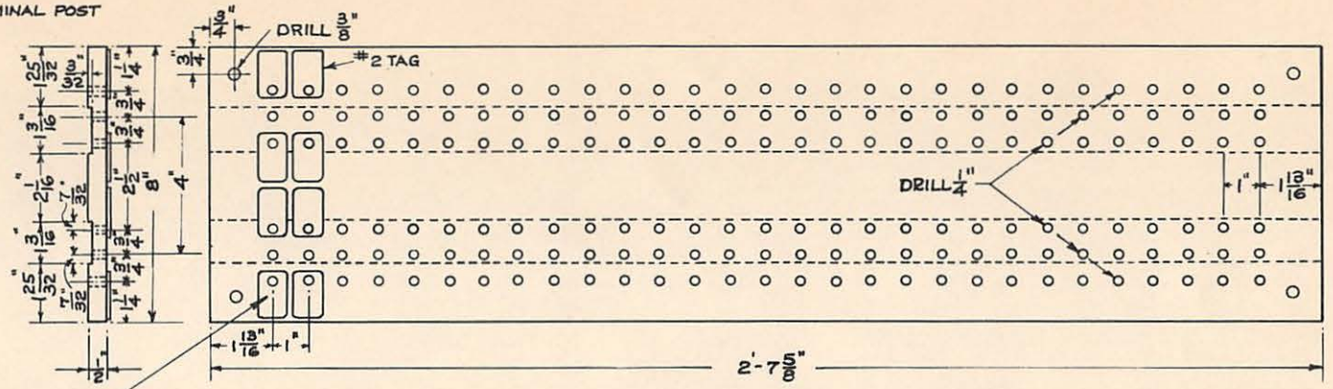
CHIEF ENGINEER

PLAN	
DRAWN J.L.A.	
CHECKED J.J.R	
CORRECT J.J.R	
ISSUE	DATE
A	4-26-34

P 38



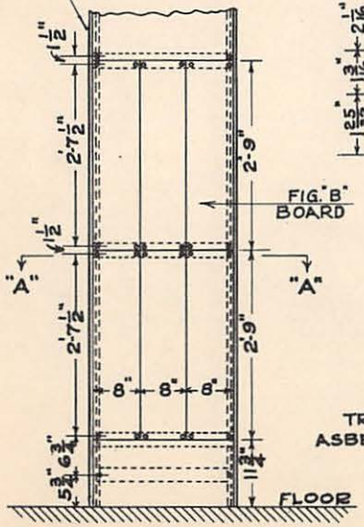
APPLICATIONS TO TERMINAL BOARDS



DWG. P536D
BLACK FIBRE TAGS
TO BE CEMENTED IN PLACE

FIG.-A.
TERMINAL BOARD FOR APPARATUS CASE
SHOWN ON DRAWING P35 — No STD. DWG.
SCALE 4 1/2" = 1'-0"

NOTE:- SIDE BOARDS TO BE BOLTED TO TERMINAL BOARD SUPPORTS



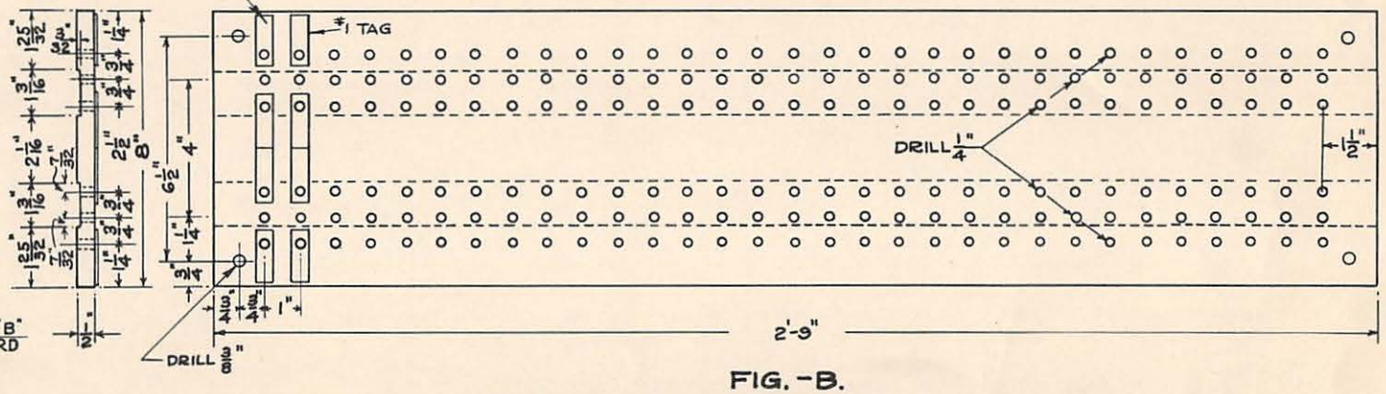
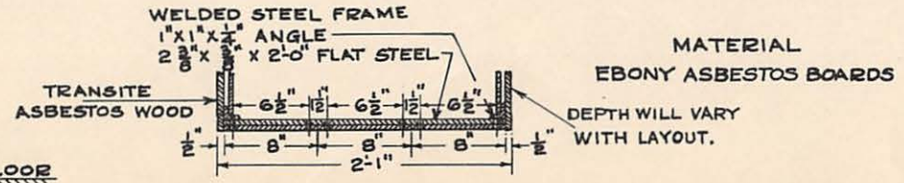


FIG.-B.
TERMINAL BOARD FOR TOWER & RELAY HOUSE
SCALE-4 1/2" = 1'-0".



MATERIAL
EBONY ASBESTOS BOARDS

TERMINAL BOARDS
FRONT VIEW
SCALE 3/4" = 1'-0"

SECTION A A.
SCALE 1 1/2" = 1'-0"

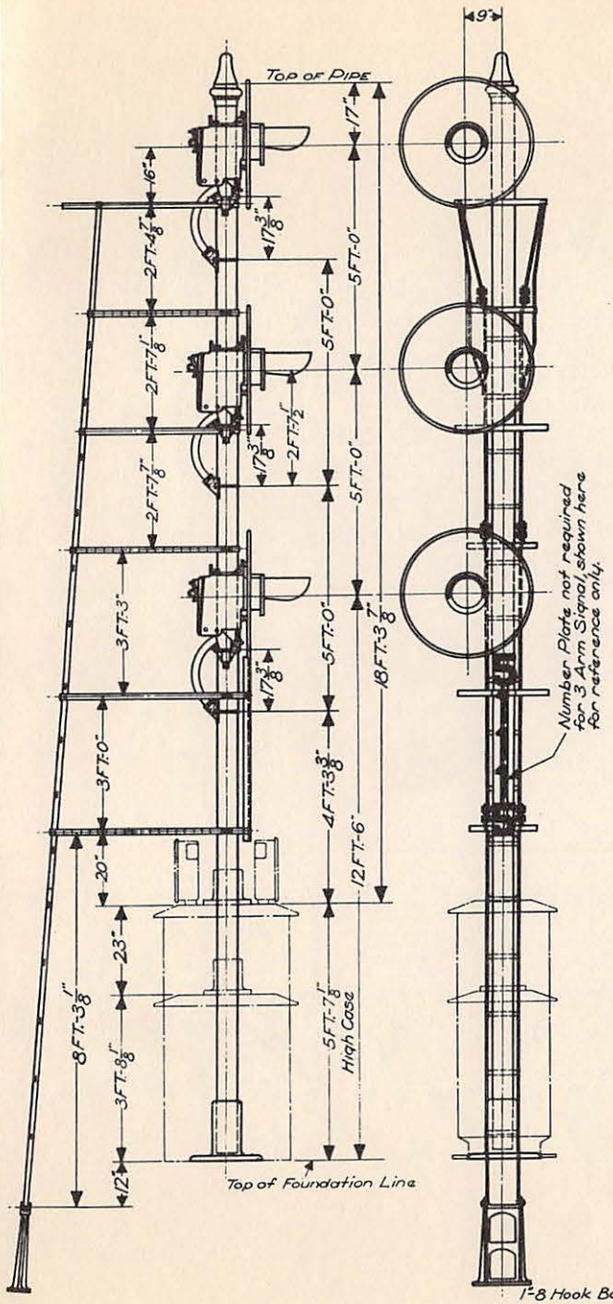
BOSTON AND MAINE R.R.
STANDARD TERMINAL BOARDS

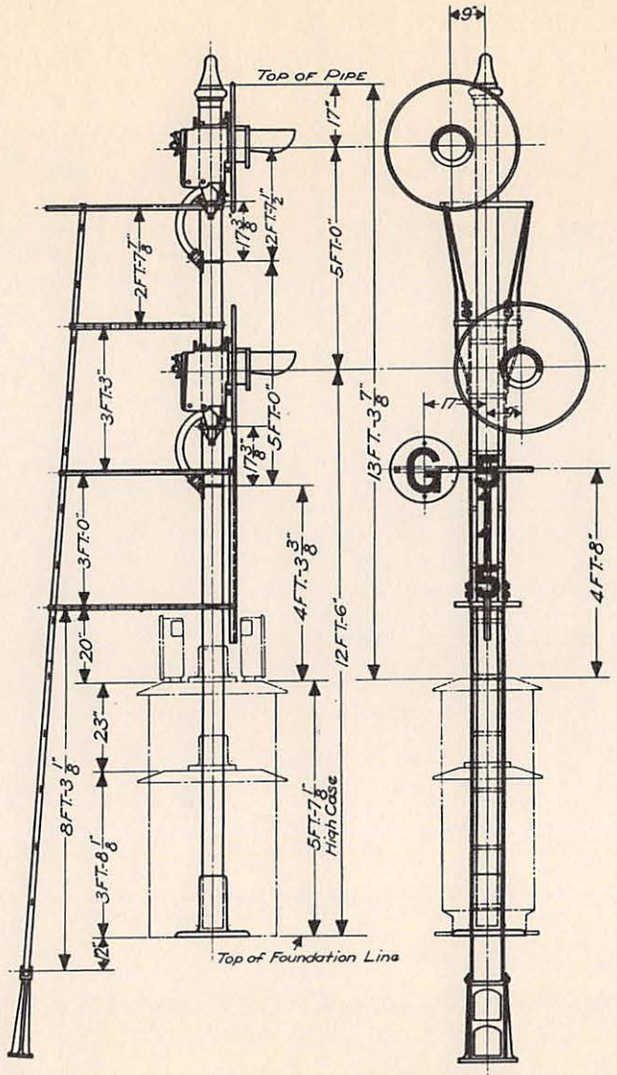
APPROVED
SIGNAL ENGINEER
F.F. Fifield
ENGINEER M.OF W.

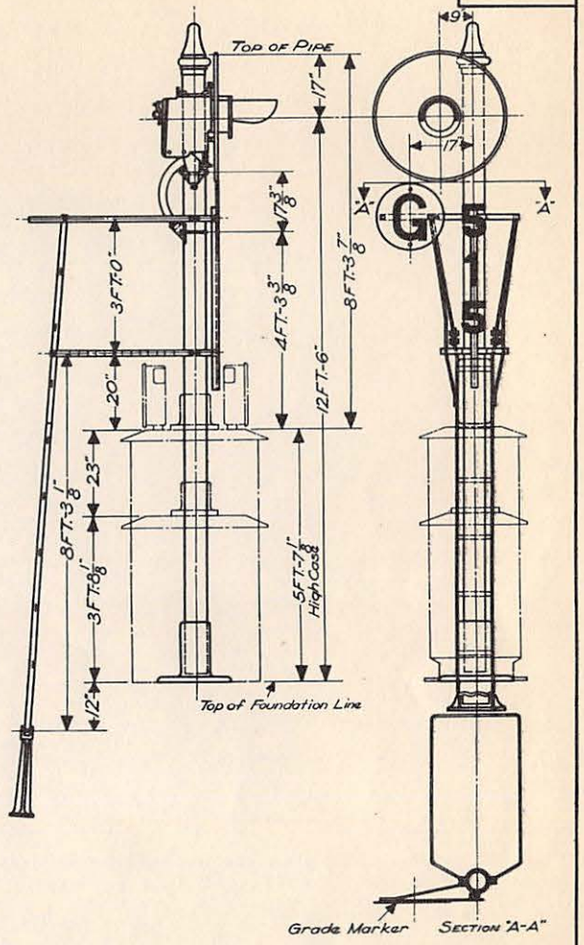
CHIEF ENGINEER

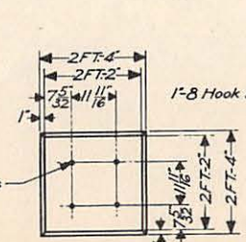
PLAN	
DRAWN BY M.F.R	
CHECKED BY A.F.S	
CORRECT J.J.B.	
ISSUE	DATE
A	7-18-36

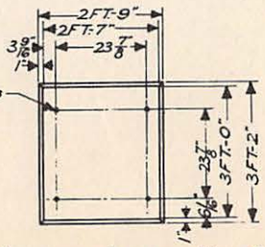
P39











FOUNDATION PLAN FOR GROUND SIGNAL. FOUNDATION PLAN FOR MECH. CASE

BOSTON AND MAINE R.R.

STANDARD

GROUND SIGNALS

TYPE "SA", COLOR LIGHT

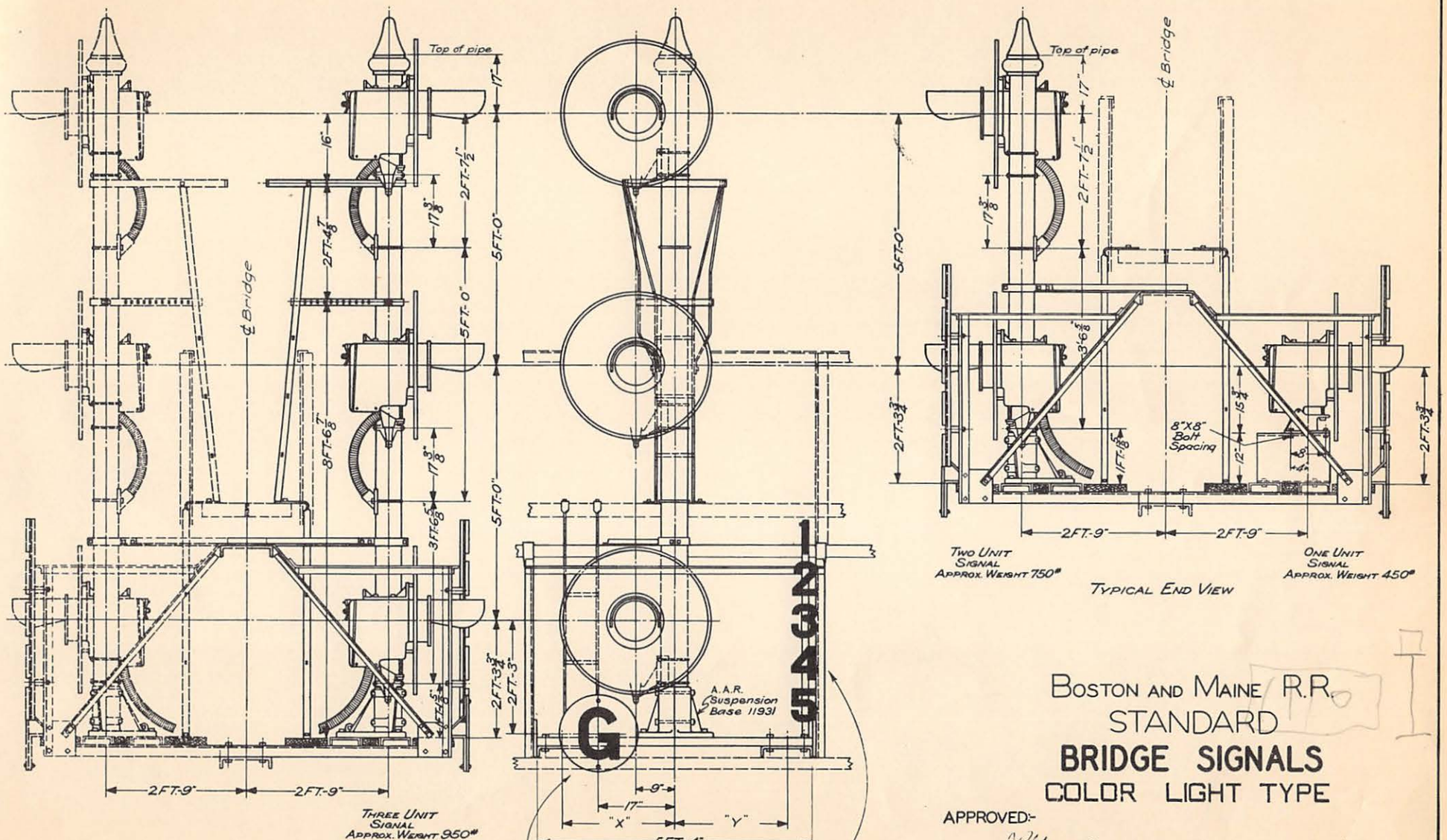
APPROVED:-

ENGINEER OF SIGNALS AND TELEGRAPH

CHIEF ENGINEER

PLAN	
DRAWN BY M.F.	
CHECKED BY	
CORRECT E.N.E.	
ISSUE	DATE
A	2-1-39

P39A
1 OF 2



SHEET 2 FIG	SHEET 1 DIMENSION "X"	DIMENSION "Y"
1	2'-2"	2'-2"
2	1'-8"	2'-8"
2	2'-2"	2'-2"
3	3'-1"	1'-3"

BOSTON AND MAINE R.R.
STANDARD
BRIDGE SIGNALS
COLOR LIGHT TYPE

APPROVED:-

ENGINEER OF SIGNALS AND TELEGRAPH

CHIEF ENGINEER

PLAN.	
DRAWN:-	
CHECKED:-	
CORRECT:	
ISSUE	DATE
A	2-1-39

BRIDGE	SECTION	DIST. "A"	DIST. "B"
3-TRACK	SECOND	5'-9"	4'-3"
3-TRACK	THIRD	4'-9"	5'-3"
4-TRACK	SECOND	5'-11"	4'-1"
4-TRACK	FOURTH	4'-7"	5'-5"

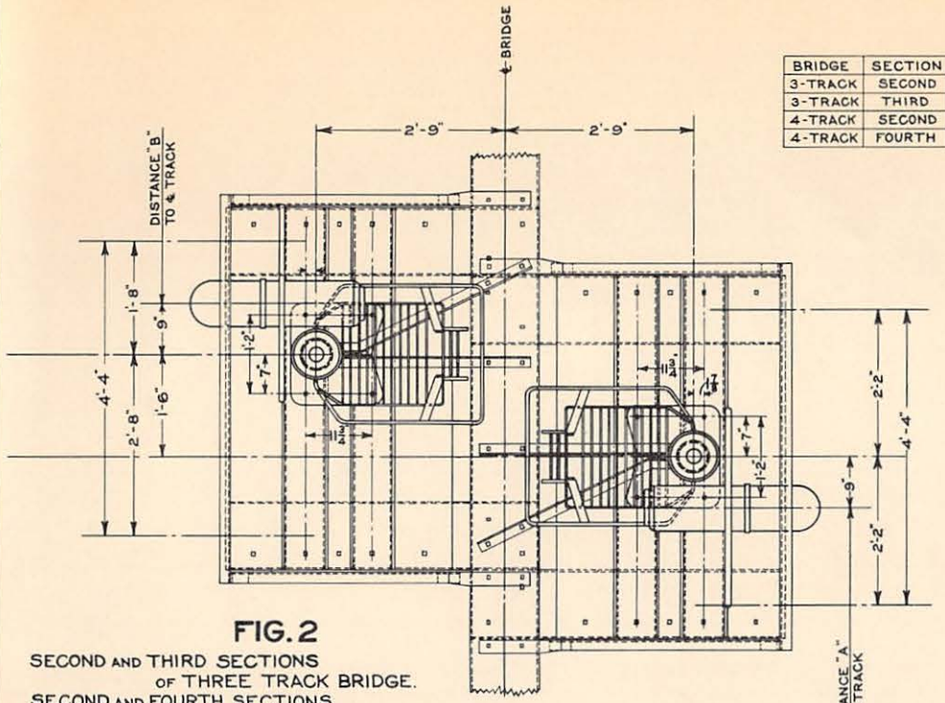


FIG. 2

SECOND AND THIRD SECTIONS OF THREE TRACK BRIDGE.
SECOND AND FOURTH SECTIONS OF FOUR TRACK BRIDGE.
(SECTIONS NUMBERED FROM LADDER END OF BRIDGE)

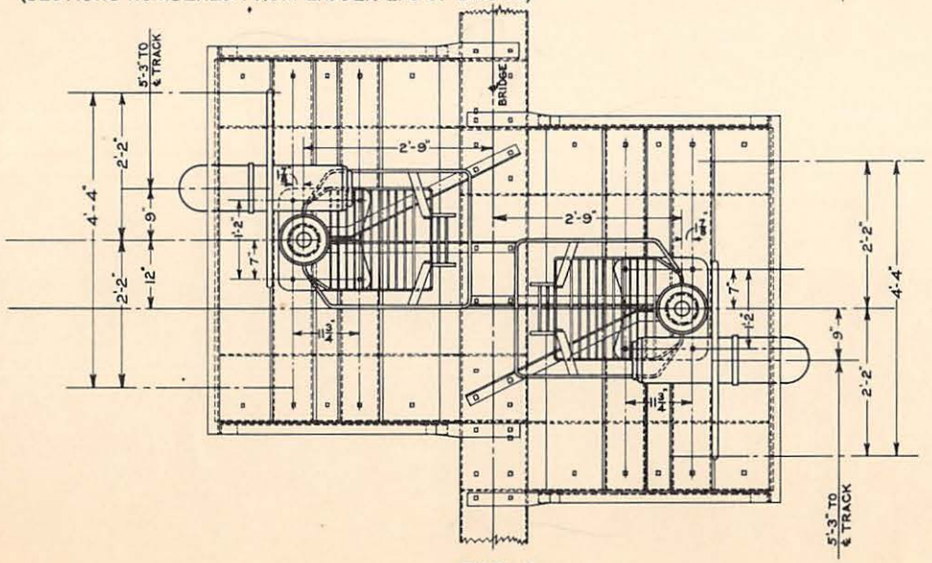


FIG. 1

CENTER SECTION OF TWO TRACK AND FOUR TRACK BRIDGES

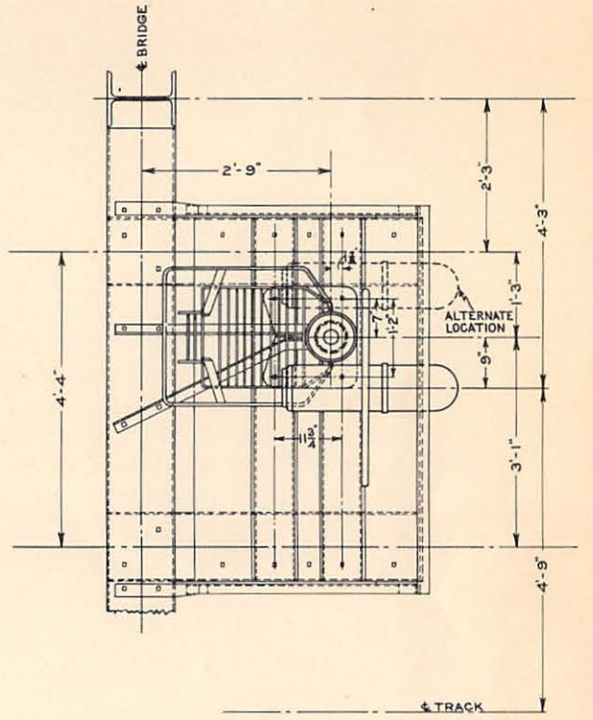


FIG. 3

END SECTION

FOR USE WITH PLANS B16, B17, B18, B19A

BOSTON AND MAINE R.R.

STANDARD BRIDGE SIGNALS

COLOR LIGHT TYPE

APPROVED:-

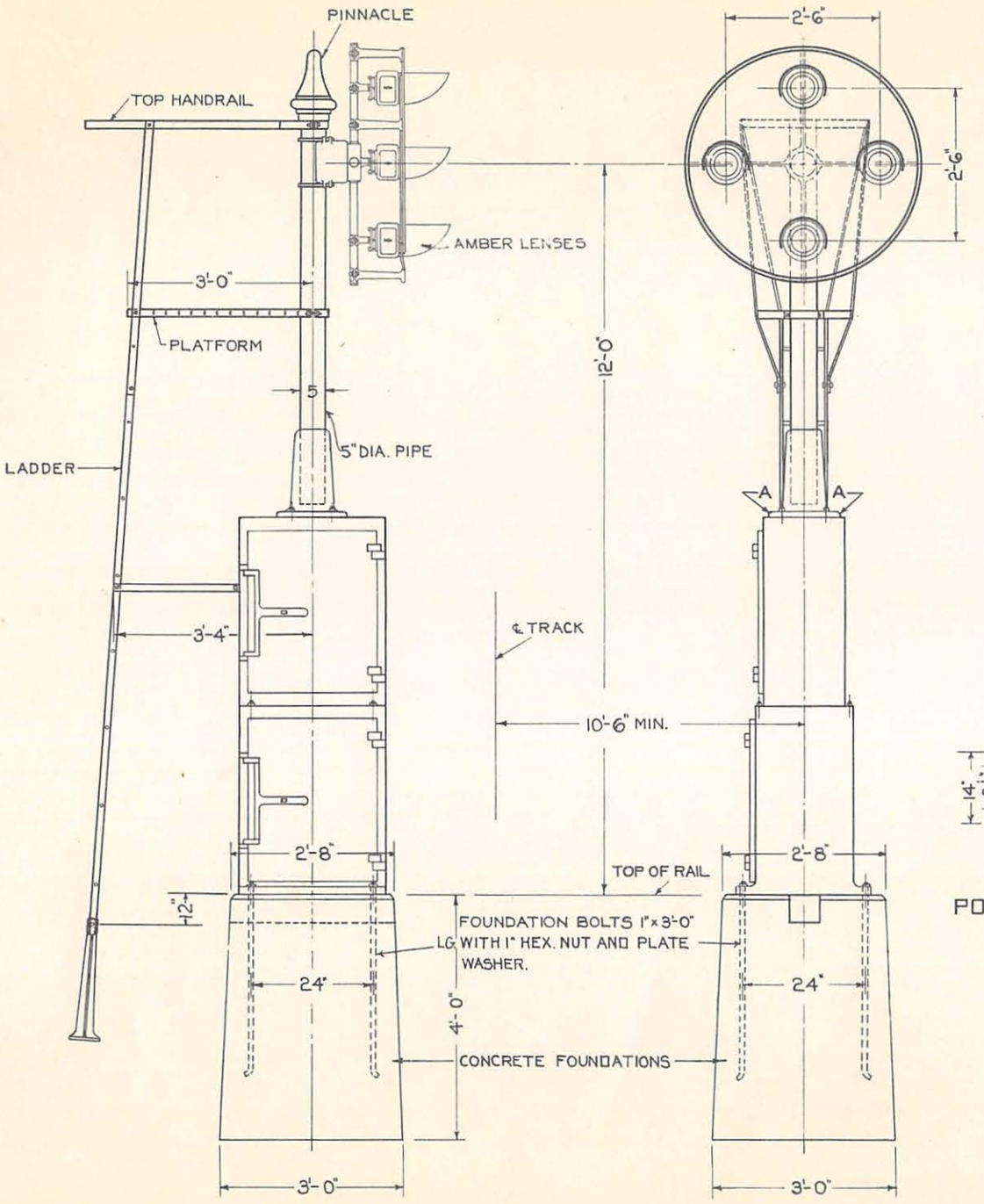
ENGINEER OF SIGNALS AND TELEGRAPH.

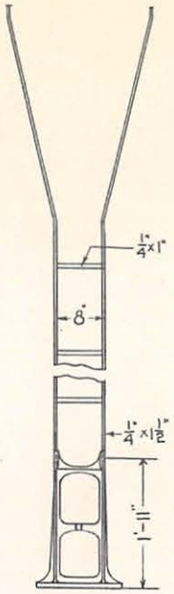
CHIEF ENGINEER.

PLAN	
DRAWN J.B.M.	
CHECKED E.R.M.	
CORRECT J.J.R.	
ISSUE	DATE
A	1-26-31
B	6-15-42

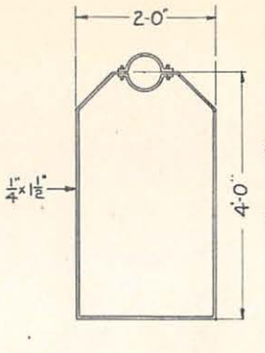
B- Ladder Base Casting & Note Addition.

P 40

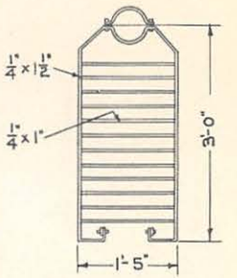




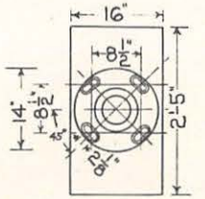
LADDER



TOP HANDRAIL



PLATFORM



POLE BASE A A

STYLE "B" COMBINED MECHANISM AND BATTERY CASE IS SHOWN FOR USE WITH STATION PROTECTION SIGNAL. SIGNAL MAY BE MOUNTED ON GROUND MAST OR DIFFERENT TYPE OF CASE WHEN SO SPECIFIED. CONCRETE TO BE IN ACCORDANCE WITH B.&M.R.R. SPECIFICATIONS FOR CONCRETE PLAIN AND REINFORCED 2500 LB. CONCRETE. PRECAST FOUNDATIONS CAN BE FURNISHED WHEN GROUND CONDITIONS ARE SATISFACTORY. WEIGHT OF PRECAST FOUNDATION 4800 LBS. TYPE SIGNAL AS SHOWN MANUFACTURED BY UNION SWITCH & SIGNAL CO. OTHER TYPES OF SIGNAL OF SAME GENERAL CONSTRUCTION MAY BE USED WHEN PLAN IS PRESENTED BY MANUFACTURER AND APPROVED BY CHIEF ENGINEER.

BOSTON AND MAINE R. R.

STANDARD STATION PROTECTION SIGNAL

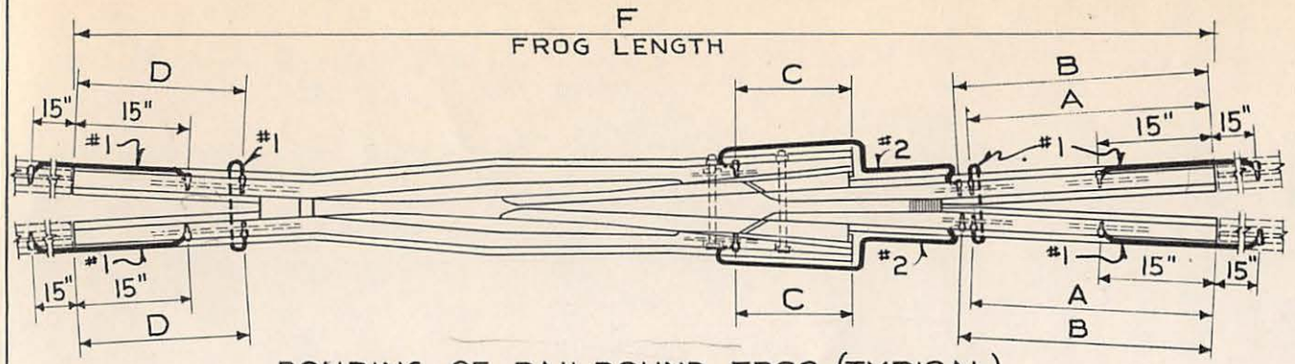
APPROVED

ENGINEER OF SIGNALS AND TELEGRAPH

CHIEF ENGINEER

PLAN	
DRAWN R.W.H.	
CHECKED J.J.R.	
CORRECT A·R·B	
ISSUE	DATE
A	2-19-32

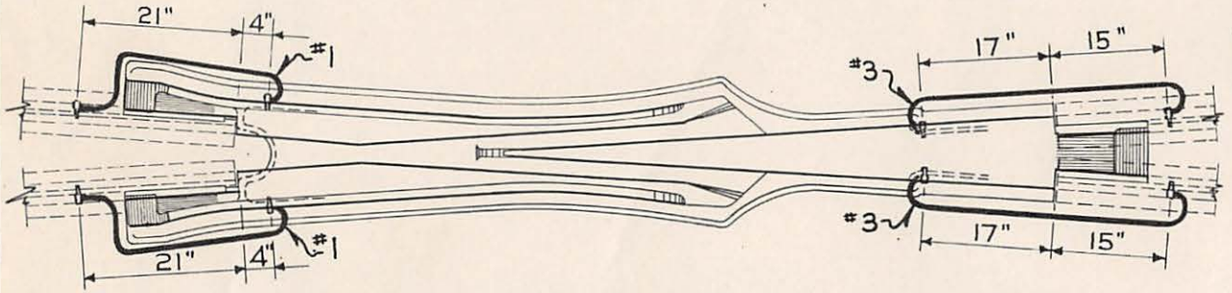
P 41



BONDING OF RAILBOUND FROG (TYPICAL)

WHEN ORDERING SPECIFY 6 OF NO. 1 STD.--35" LENGTH, AND 2 OF #2, "E" LENGTH; PER FROG.

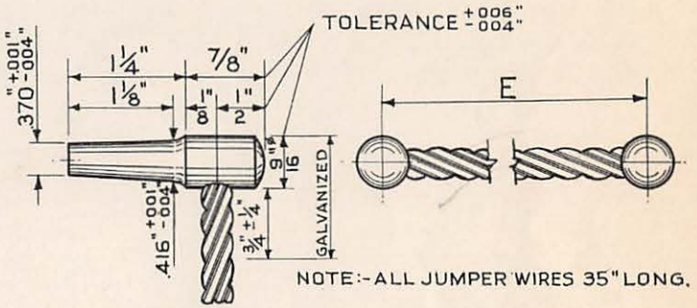
NO. OF FROG	F	A	B	C	D	E
6	10'-0"	2'-0"	2'-2"	2'-0"	1'-9"	42"
7	12'-0"	2'-3"	2'-5"	1'-8"	1'-8"	42"
8	13'-0"	2'-6"	2'-8"	1'-8"	1'-9"	42"
9	16'-0"	3'-0"	3'-2"	1'-8"	2'-9"	42"
10	16'-6"	3'-6"	3'-8"	1'-8"	2'-6"	60"
12	18'-6"	4'-0"	4'-2"	1'-8"	2'-10"	60"
15	22'-6"	4'-8"	4'-10"	2'-2"	3'-7"	60"
20	29'-0"	6'-6"	6'-8"	2'-1"	3'-8"	70"



BONDING FOR STANDARD SELF GUARDED FROGS

TYPICAL FOR FROG NOS. 6-7-8-9-10-12.

WHEN ORDERING SPECIFY 2 OF NO. 1 STD.-35" LENGTH, AND 2 OF #3, 37" LENGTH; PER FROG.

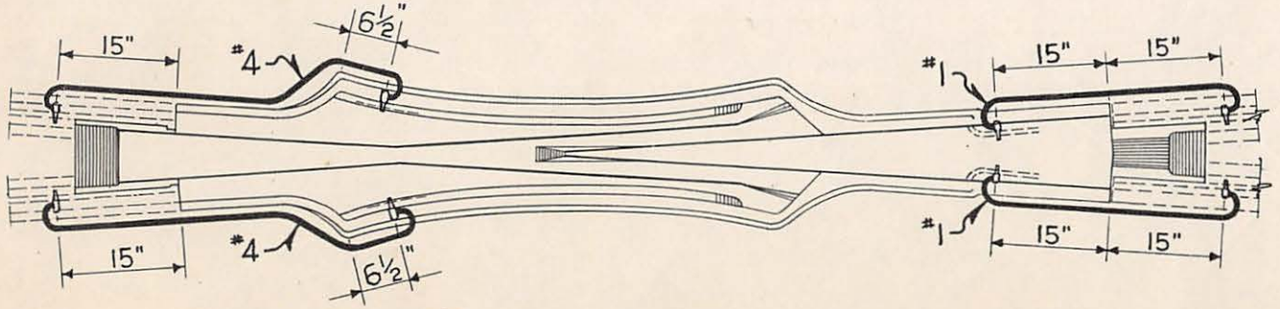


NOTE:- ALL JUMPER WIRES 35" LONG.

STRANDED BOND WIRE

AS PER BOSTON & MAINE R.R. STANDARD SPECIFICATIONS.

#1 STD. LENGTH 35"



BONDING FOR {#8 / #10} MANGANESE SELF GUARDED FROG-SPECIAL-WITH INSULATED JOINTS

WHEN ORDERING SPECIFY 2 OF #4-56" LENGTH, AND 2 OF #1 STD. 35" LENGTH; PER FROG.

NOTE: BOND WIRE LEFT OFF WHERE INSULATIONS OCCUR.

BOSTON AND MAINE R. R.

STANDARD FROG BONDING

APPROVED

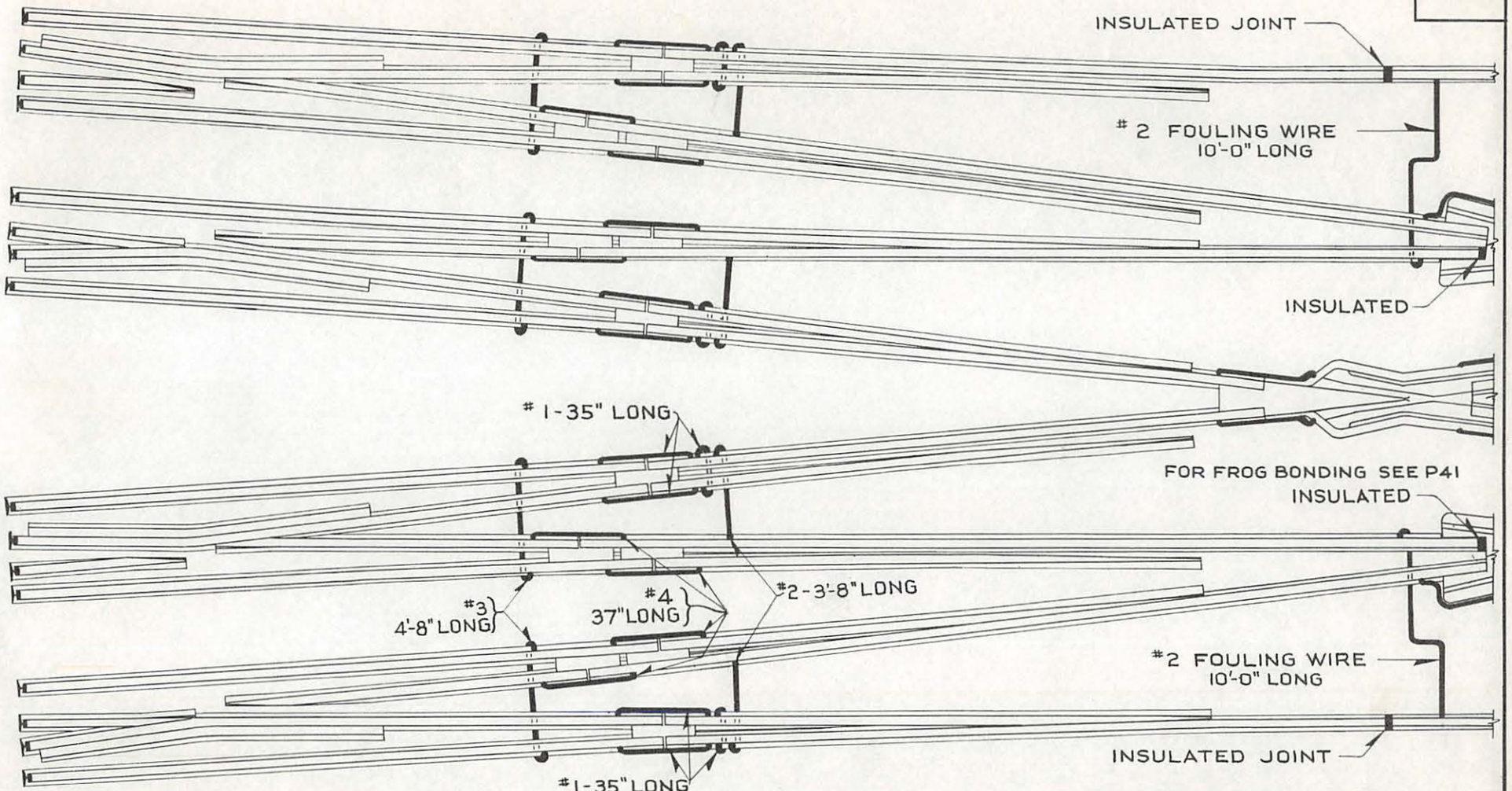
H. F. Fuller
ENGINEER M. OF W.

J. P. Clement
SIGNAL ENGINEER

W. Backes
CHIEF ENGINEER

PLAN	
DRAWN R.W.H.	
CHECKED J.J.R.	
CORRECT A.R.B.	
ISSUE	DATE
A	12-1-31

P44



NOTES

USE THIS PLAN WITH P41-P42-P43-P45. STD. PLANS.

FOULING WIRES 10'-0" LONG. EACH FOULING WIRE SHALL BE SECURED TO TIE BY 5 GALVANIZED STAPLES, STD. 1½" SIZE.

BOSTON AND MAINE R. R.

STANDARD

INSULATING AND BONDING

OF DOUBLE SLIP ENDS

ON SCISSORS CROSSING

APPROVED

F. J. Fitzell
ENGINEER M. OF W.

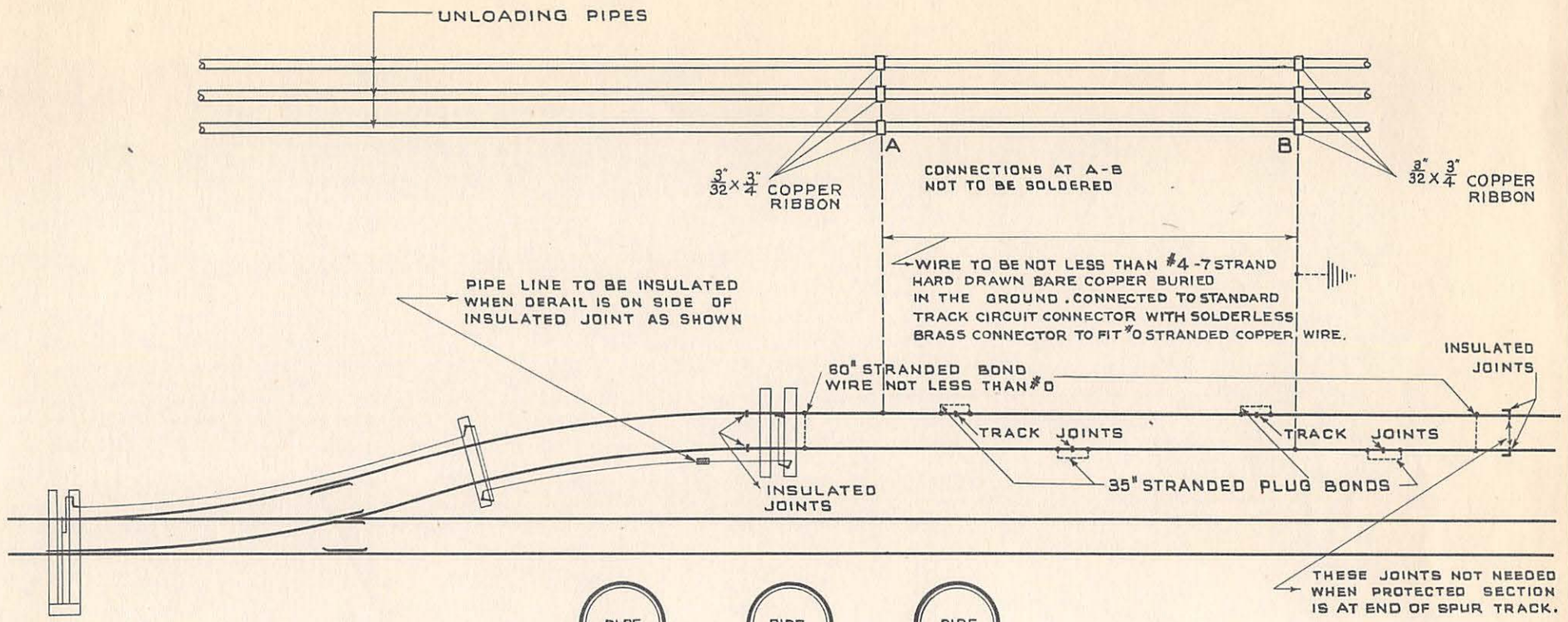
J. H. Mueller
SIGNAL ENGINEER

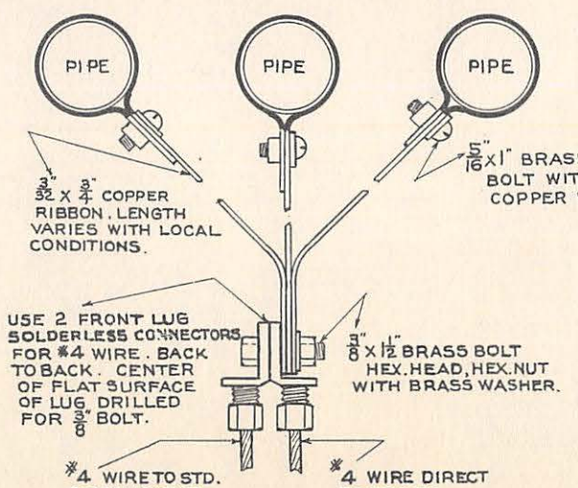
W. F. Beckler
CHIEF ENGINEER

PLAN	
DRAWN R.B.H	
CHECKED A.H.C. J.J.R.	
CORRECT C.M.F.	
ISSUE	DATE
A	10-22-31
B	12-15-33
C	10-19-44

B-GROUNDING DETAILS.
C-CHANGE ELECTRIC WIRE TO AAR SPEC.

P46


UNLOADING PIPES
A
B
3/32 X 3/4 COPPER RIBBON
CONNECTIONS AT A-B NOT TO BE SOLDERED
3/32 X 3/4 COPPER RIBBON
WIRE TO BE NOT LESS THAN #4 -7 STRAND HARD DRAWN BARE COPPER BURIED IN THE GROUND. CONNECTED TO STANDARD TRACK CIRCUIT CONNECTOR WITH SOLDERLESS BRASS CONNECTOR TO FIT #0 STRANDED COPPER WIRE.
PIPE LINE TO BE INSULATED WHEN DERAIL IS ON SIDE OF INSULATED JOINT AS SHOWN
60" STRANDED BOND WIRE NOT LESS THAN #0
INSULATED JOINTS
TRACK JOINTS
TRACK JOINTS
INSULATED JOINTS
35" STRANDED PLUG BONDS
THESE JOINTS NOT NEEDED WHEN PROTECTED SECTION IS AT END OF SPUR TRACK.


PIPE
PIPE
PIPE
3/32 X 3/4 COPPER RIBBON. LENGTH VARIES WITH LOCAL CONDITIONS.
5/16 X 1" BRASS SCREW BOLT WITH SQUARE COPPER WASHER.
USE 2 FRONT LUG SOLDERLESS CONNECTORS FOR #4 WIRE. BACK TO BACK. CENTER OF FLAT SURFACE OF LUG DRILLED FOR 3/8" BOLT.
3/8 X 1 1/2 BRASS BOLT HEX. HEAD, HEX. NUT WITH BRASS WASHER.
#4 WIRE TO STD. GROUND ROD.
#4 WIRE DIRECT TO TRACK.

GROUNDING DETAILS FOR UNLOADING PIPES

NOTE :- THE FIRST RAIL ON EITHER SIDE OF THE INSULATED JOINTS IN THE DIL SIDING MUST NOT BE LESS THAN 85# SECTION.

BEFORE UNLOADING TANK CAR ALL OTHER CARS MUST BE SEPARATED FROM CAR TO BE UNLOADED, OTHER CARS TO BE PLACED OUTSIDE THE LIMITS OF THE PROTECTED SECTION.

WHEN REQUIRED — WHEN TANK CARS ARE BEING FILLED OR UNLOADED THEY SHOULD BE ELECTRICALLY CONNECTED TO BONDED RAIL WITH #4 A.W.G. FLEXIBLE WIRE.

BOSTON AND MAINE R.R.

STANDARD
INSULATED SIDE TRACK

FOR TANK CARS CONTAINING INFLAMMABLE LIQUIDS

METHOD OF GROUNDING AND BONDING

APPROVED

H.F. Fifield
ENGINEER M. OF W.

J.L. Mueller
ENGINEER OF SIGNALS AND TELEGRAPH

B Leighton
CHIEF ENGINEER

PLAN	
DRAWN	J.L.B
CHECKED	A.R.B
CORRECT	J.J.R

ISSUE	DATE
A	2-15-34
B	6-7-34
C	6-15-42
D	11-4-52

A-SUPERSEDES P42 INSULATING AND BONDING.
B-CHANGE IN D DISTANCE
C-CHANGE IN DERAIL LOCATIONS.
D-GENL. REVISION FIG. 7 ADDED.

P-47

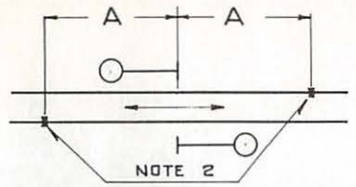


FIG. 1
SINGLE TRACK
DOUBLE SIGNAL LOCATION
DOUBLE DIRECTION TRAFFIC

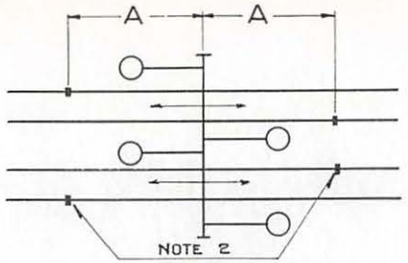


FIG. 2
MULTIPLE TRACK
DOUBLE SIGNAL LOCATIONS
DOUBLE DIRECTION TRAFFIC

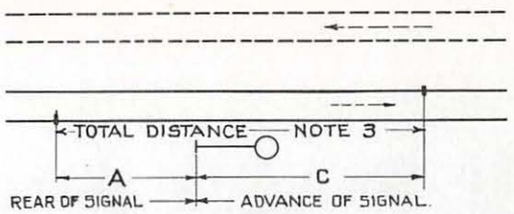


FIG. 3
SINGLE OR MULTIPLE TRACK
SINGLE SIGNAL LOCATION
SINGLE DIRECTION TRAFFIC

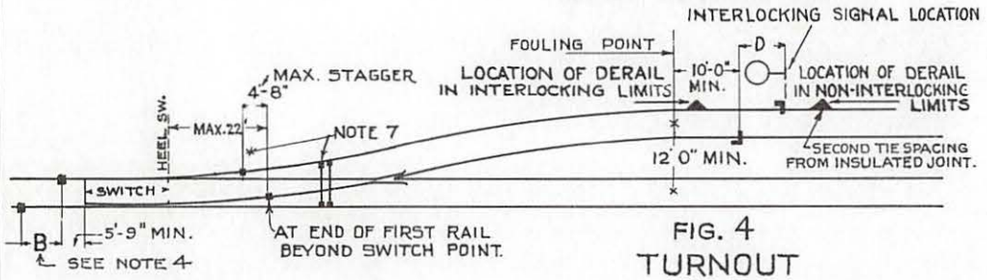


FIG. 4
TURNOUT

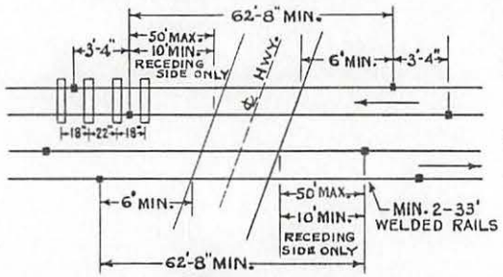


FIG. 7
AUTOMATIC GATE LOCATION

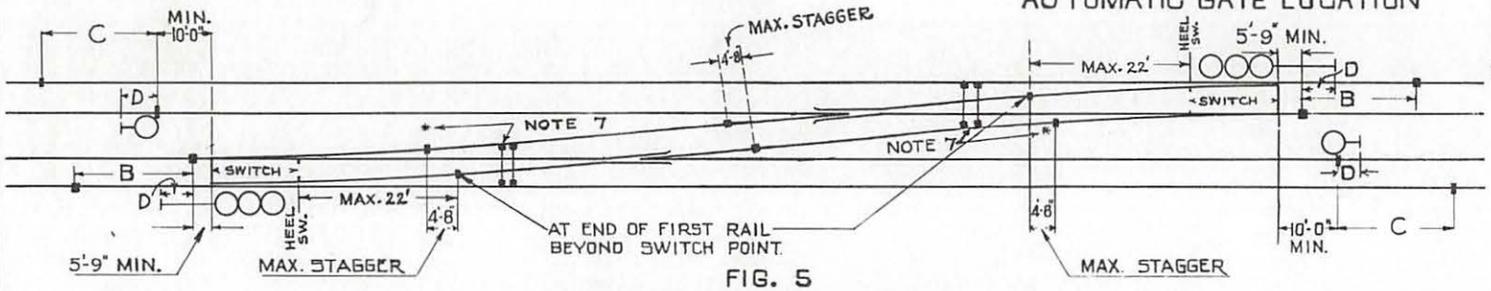


FIG. 5
CROSSOVER - MAIN TRACKS
INTERLOCKED OR NON-INTERLOCKED

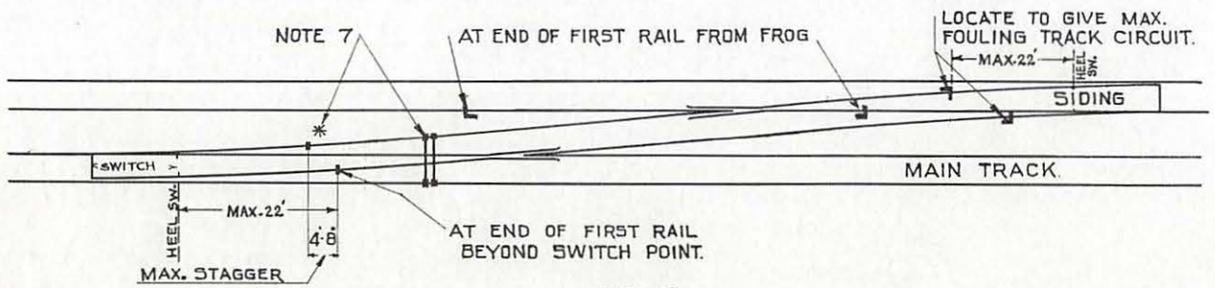


FIG. 6
CROSSOVER - MAIN TRACK TO SIDING
NON-INTERLOCKED.

NOTES.

1-TO MINIMIZE RAIL CUTTING OR THE USE OF SHORT LENGTHS, THE FOLLOWING TOLERANCES ARE ALLOWABLE:
- A MAY VARY FROM 0 TO 11'-0"
- B FOR STAGGER, SEE F-37.
- C MAY VARY FROM 0 TO 22'-0"
- D MAY VARY FROM 0 TO 5'-0"

2-BOTH JOINTS SHALL NOT BE ON SAME SIDE OF SIGNAL.
3-STAGGERED JOINTS - MAX. 22'-0" APART.
4-WHERE INSULATED JOINTS ARE REQUIRED AT ELECTRICALLY LOCKED OR INTERLOCKED SWITCH.
5-JOINTS IN FIGS. 1, 2, 3, 4 & 5, EXCEPT JOINTS BETWEEN SWITCH POINT AND FROG, MAY BE REVERSED AS TO RAILS.
6-JOINTS NOT TO BE LOCATED AT FROGS IF AVOIDABLE.
7-DOUBLE FOULING WIRES TO BE BONDED WHERE POSSIBLE TO SECOND RAIL FROM JOINT MARKED * AND TO BE AHEAD OF FROG JOINT. THIS TYPE FOULING TO BE USED EXCEPT WHERE CIRCUIT PLANS SPECIFY OTHERWISE.
8-SPECIAL CIRCUMSTANCES MAY REQUIRE JOINTS TO BE OPPOSITE. DETAIL PLANS WILL SO SPECIFY WHEN NECESSARY.
9-NEW SIGNALS TO BE LOCATED SO AS TO AVOID RAIL CUTTING WHEN POSSIBLE.

BOSTON AND MAINE R. R.

STANDARD INSULATED JOINT LOCATIONS

APPROVED.
E. M. Fox
ENGINEER OF SIGNALS AND TELEGRAPH
H. J. Jeed
ENGINEER M. OF W.
CHIEF ENGINEER.

PLAN	
DRAWN	R.B.H.
CHECKED	N.G.C.
CORRECT	E.M.F.
ISSUE	DATE
A	7-2-41

P52

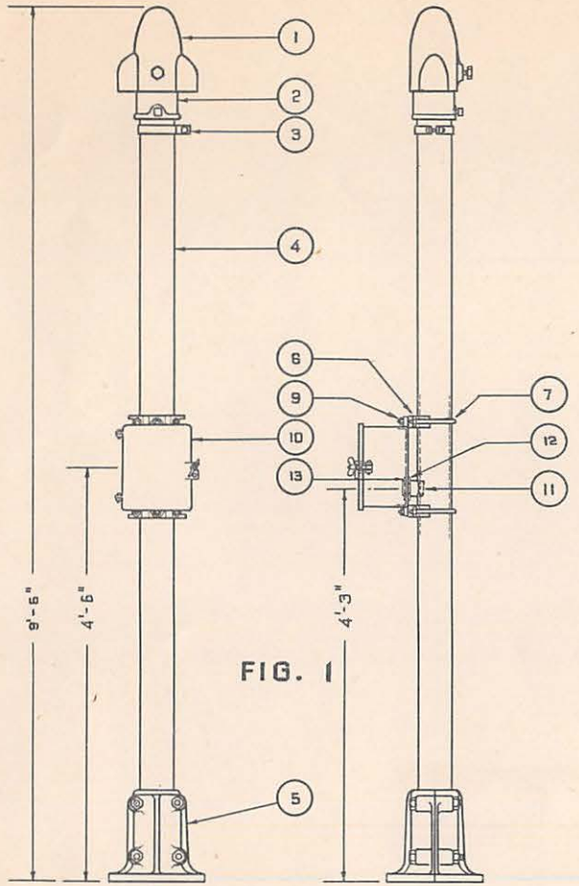


FIG. 1

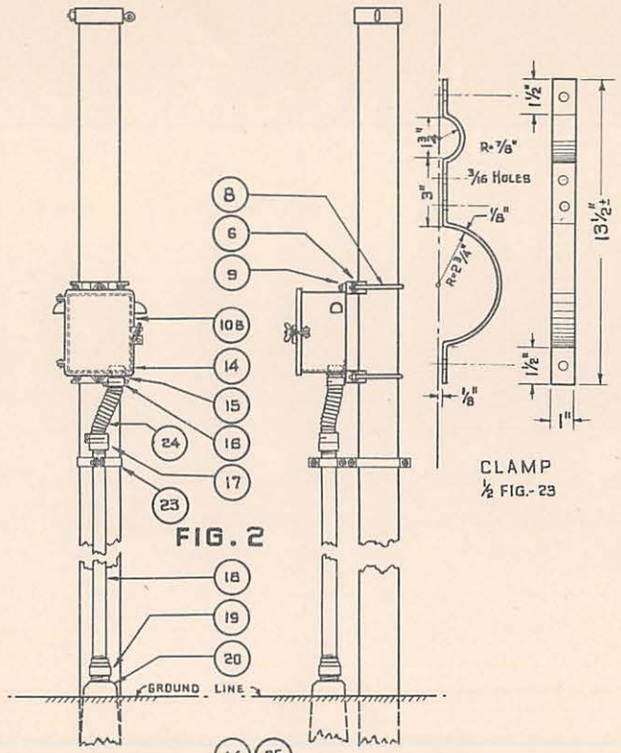
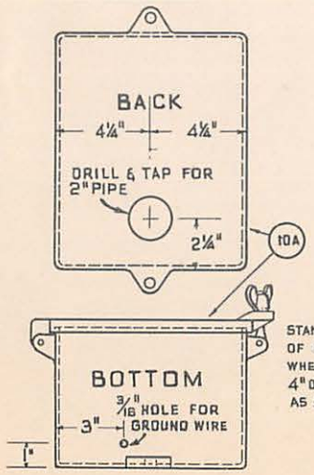


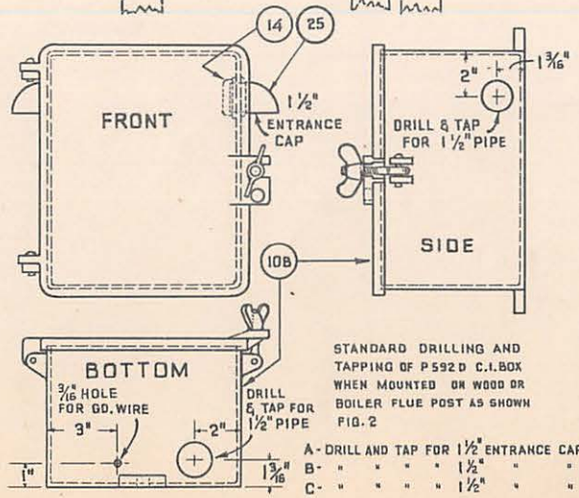
FIG. 2

CLAMP
½ FIG.-23

REF.	FIG.1	FIG2	NAME
1	1		PINNACLE - A.A.R. 11923
2	1		POST HEAD - A.A.R. 11924
3	1		CABLE SUPPORT CLAMP - A.A.R. 11922
4	1		4" IRON PIPE POST 8'-7½" LONG - A.A.R. 11921
5	1		CLAMP BASE COMPLETE FOR 4" PIPE POST A.A.R. 14482
6	2	2	ADAPTER CLAMP - B & M R R PLAN P593D - SH. 1
7	2		U BOLT FOR 4" PIPE POST - B & M R R PLAN - P593D - SH. 2
8		2	U BOLT FOR 5" PIPE POST - B & M R R PLAN - P593D - SH. 2
9	2	2	7/16" × 1¾" SQ. HD. BOLT, HEX. NUT AND WASHER
10			C.I. TERMINAL BOX - B & M R R PLAN P592D
10A	1		" " " " " " - DRILLED AND TAPPED FOR FIG. 1
10B		1	" " " " " " - " " " " FIG. 2
11	1		2" × 2½" LONG GALV. PIPE, 1" THREAD ONE END, REAMED AND CHAMFER
12	1		2" GALV. CONDUIT LOCK NUT
13	2		2" GALV. CONDUIT BUSHING
14		1	1½" CONDUIT BUSHING
15		1	1½" " LOCKNUT
16		1	1½" STRAIGHT CONNECTOR, SQUEEZE TYPE FOR FLEXIBLE STEEL CONDUIT
17		1	1½" FLEX. TO RIGID COUPLING
18			1½" RIGID GALV. CONDUIT [GIVE LENGTH]
19		1	2" × 1½" REDUCER
20		1	CABLE RISER, B & M R R PLAN P14-SH. 1
21			CABLE POST COMPLETE, A.A.R. 1192 A [ITEMS 1 TO 5]
22			CABLE POST COMP. WITH C.I. TERMINAL BOX AND FITTINGS AS SHOWN FIG. 1
23			CLAMP FOR 1½" PIPE - COMP. WITH 4-½" × 1½" HEX. BOLTS AND NUTS
24			1½" FLEX. CONDUIT
25			1½" ENTRANCE CAP



STANDARD DRILLING OF P592D C.I. BOX WHEN MOUNTED ON 4" OR 5" PIPE POST AS SHOWN FIG. 1



STANDARD DRILLING AND TAPPING OF P592D C.I. BOX WHEN MOUNTED ON WOOD OR BOILER FLUE POST AS SHOWN FIG. 2

A - DRILL AND TAP FOR 1½" ENTRANCE CAP - LEFT SIDE
B - " " " " 1½" " " RIGHT SIDE
C - " " " " 1½" " " BOTH SIDES

BOSTON AND MAINE R.R.

STANDARD MOUNTING AND DRILLING CAST IRON TERMINAL BOX

APPROVED

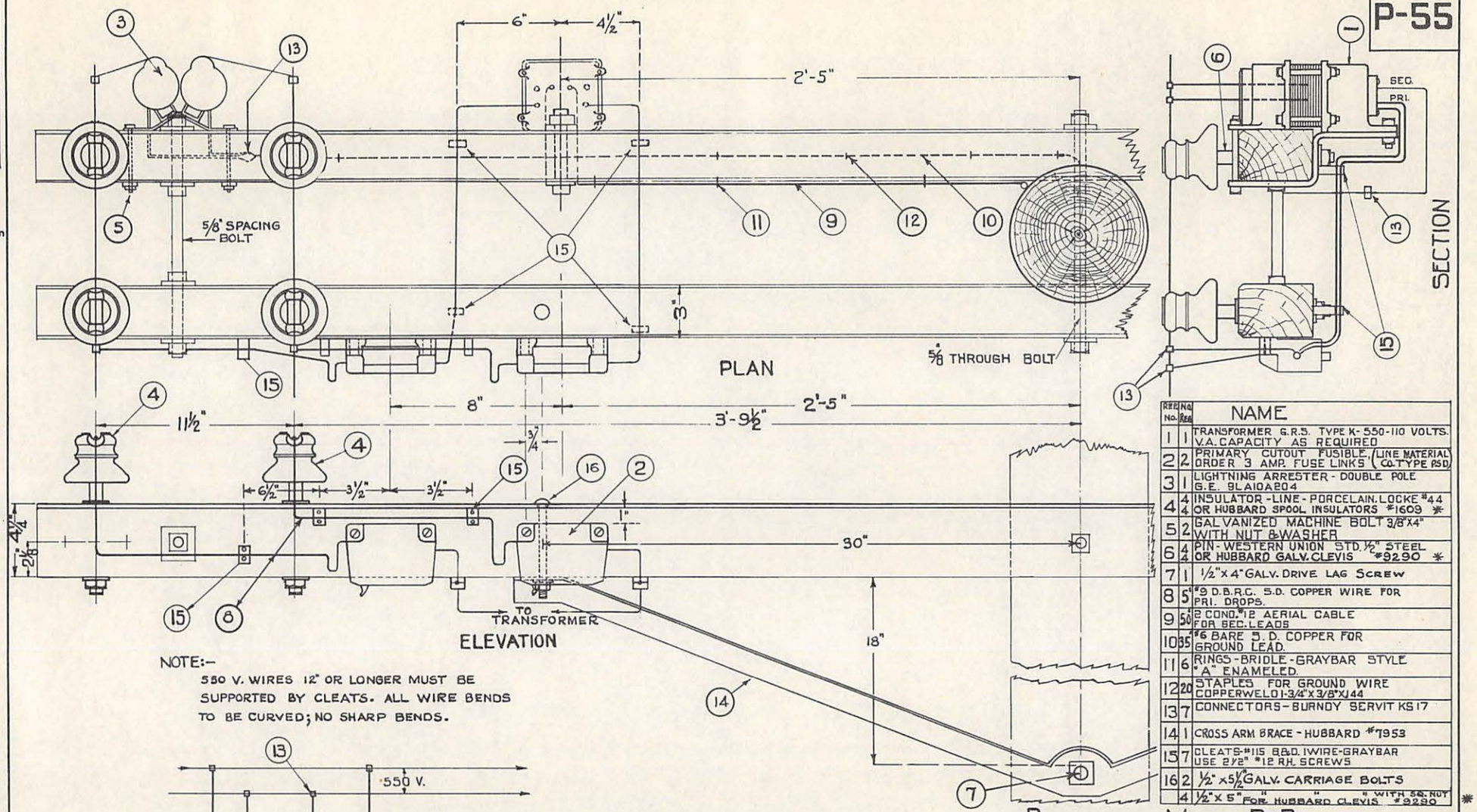
SIGNAL ENGINEER

CHIEF ENGINEER

PLAN	
DRAWN. J.L.B.	
CHECKED. A.R.B.	
CORRECT. J.J.R.	
ISSUE	DATE
A	5-9-33
B	3-14-42
C	1-28-54

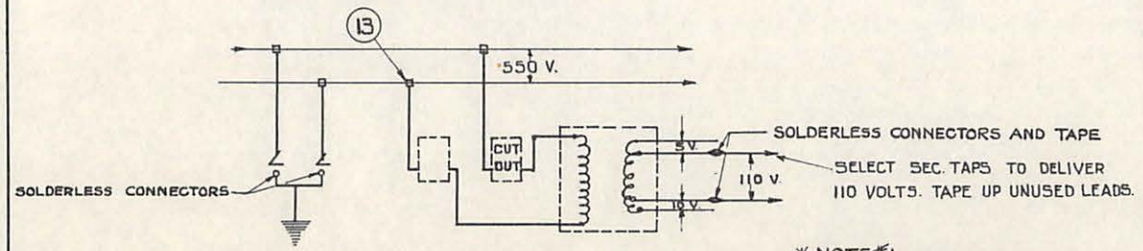
B Type of Arrester & Accessories changed.
C-General Revision

P-55



REF No.	No. Req.	NAME
1	1	TRANSFORMER G.R.S. TYPE K-550-110 VOLTS. V.A. CAPACITY AS REQUIRED
2	2	PRIMARY CUTOUT FUSIBLE, (LINE MATERIAL ORDER 3 AMP. FUSE LINKS (CO. TYPE 85D)
3	1	LIGHTNING ARRESTER - DOUBLE POLE G.E. 9L A10A204
4	4 4	INSULATOR - LINE - PORCELAIN. LOCKE #44 OR HUBBARD SPOOL INSULATORS #1609 *
5	2	GALVANIZED MACHINE BOLT 3/8"X4" WITH NUT & WASHER
6	4 4	PIN - WESTERN UNION STD. ½" STEEL OR HUBBARD GALV. CLEVIS #9290 *
7	1	½"X 4" GALV. DRIVE LAG SCREW
8	5'	#9 D.B.R.C. S.D. COPPER WIRE FOR PRI. DROPS.
9	50'	2 COND. #12 AERIAL CABLE FOR SEC. LEADS
10	35'	#6 BARE S. D. COPPER FOR GROUND LEAD.
11	6	RINGS - BRIDLE - GRAYBAR STYLE "A" ENAMELED.
12	20	STAPLES FOR GROUND WIRE COPPERWELD 1-3/4" X 3/8" XJ44
13	7	CONNECTORS - BURNDY SERVIT KS 17
14	1	CROSS ARM BRACE - HUBBARD #7953
15	7	CLEATS - #115 B&D. IWIRE-GRAYBAR USE 2½" #12 RH. SCREWS
16	2	½" x 5½" GALV. CARRIAGE BOLTS
	4	½" X 5" " " " WITH SQ. NUT * FOR HUBBARD CLEVIS #9290

NOTE:-
550 V. WIRES 12" OR LONGER MUST BE SUPPORTED BY CLEATS. ALL WIRE BENDS TO BE CURVED; NO SHARP BENDS.



* NOTE #1
THIS MATERIAL TO BE FURNISHED INSTEAD OF INSULATORS AND STEEL PINS IF 550 VOLT LINE DEAD-ENDS.

BOSTON AND MAINE R.R.

STANDARD TRANSFORMER POLE LAYOUT

FOR 550 VOLT SIGNAL TRANSMISSION LINE

E. M. Fox
ENGINEER OF SIGNALS AND TELEGRAPH

CHIEF ENGINEER

PLAN	
Drawn By	M.E.
Checked By	J.H.C.
Correct	C.W.F.

ISSUE	DATE
A	2-1-39
B	4-17-48
C	3-7-49
D	4-24-51
E	11-4-58

B = Rev Notes etc.
C = Rev. to cover P56-1 housing
D = " "
REMOVED
E = Notes revised

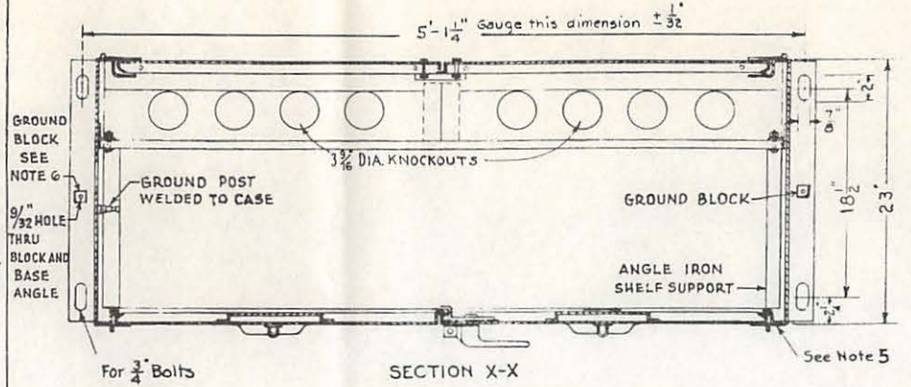
P 56

PAINTING:
(A) ALL STEEL TO HAVE ONE COAT OF RED OXIDE PRIMER AND ONE FINISH COAT OF ALUMINUM PAINT, INSIDE AND OUTSIDE, BEFORE ASSEMBLING FLOOR AND BACK BOARDS.
(B) BACK BOARDS TO HAVE TWO COATS OF GOOD QUALITY LIGHT GRAY SEMI GLOSS PAINT ON ALL SIDES AND EDGES.
(C) FLOOR BOARDS TO HAVE TWO COATS OF BLACK ACID RESISTING PAINT.

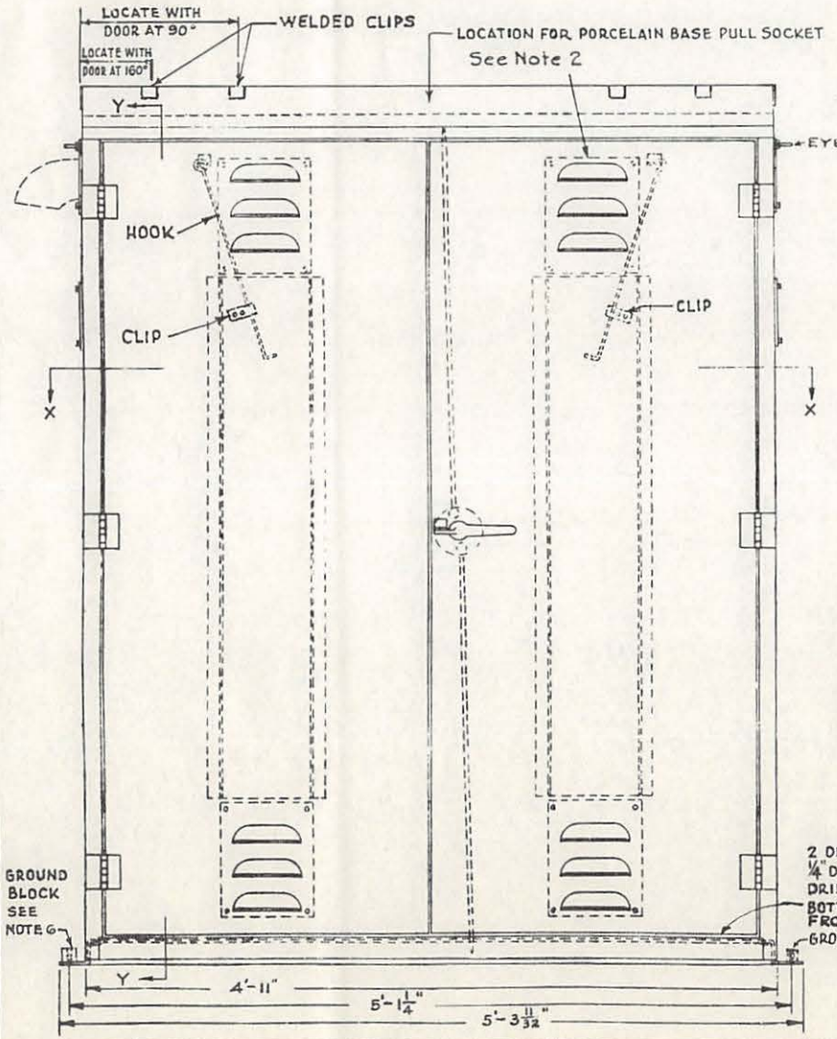
(D) IN PAINTING, CARE MUST BE TAKEN TO AVOID STOPPING UP SCREENS IN VENTILATORS.

NOTE 1.– CASE TO BE WELDED CONSTRUCTION EXCEPT WHERE REMOVABLE MEMBERS ARE SHOWN.
2.– APPLY REMOVABLE NON-RUSTING SCREEN TO ALL VENTILATORS.
3.– ONE ENTRANCE CAP TO BE SUPPLIED, UNLESS OTHERWISE SPECIFIED.
4.– BACKBOARDS TO BE MADE OF 3/4" 5 PLY EXTERIOR FIR GRADE A-C PLYWOOD.
5.– AFTER FINAL PAINT COAT HAS DRIED AND BEFORE SHIPPING CASE, OIL ALL HINGES AND GREASE BEARING PARTS OF HANDLE AND LATCHING MECHANISM. ALL MOVING PARTS TO OPERATE FREELY.

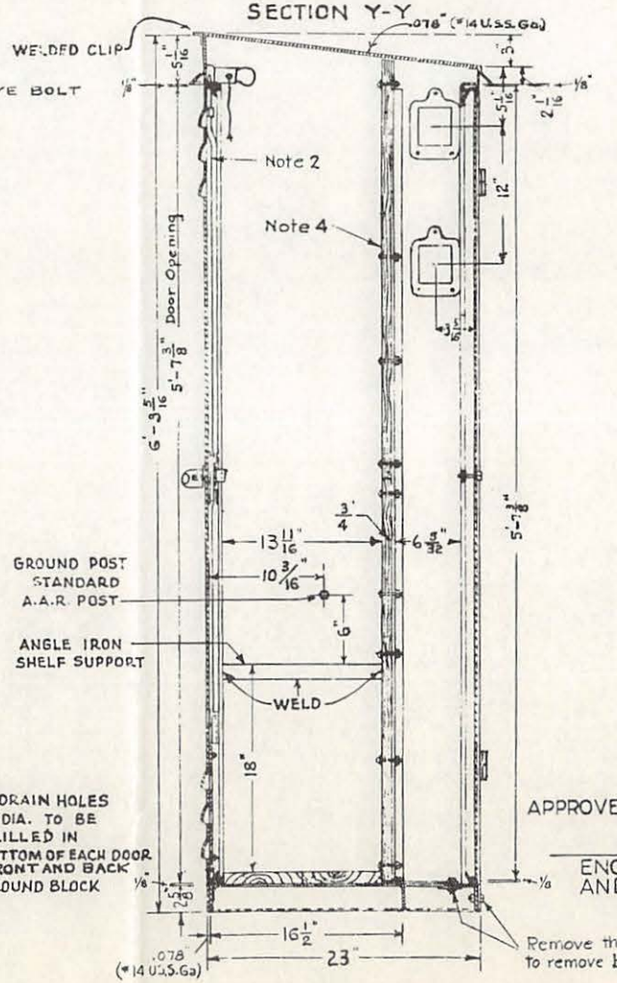
6. THIS BLOCK IS FOR GROUND CONNECTIONS. HOLES IN BLOCK MUST BE CLEAN AND BRIGHT AND ARE TO BE COATED WITH GREASE FOR SHIPMENT.
7. BATTERY CLEATS OF PINE – 2 CLEATS 1/2" × 3/4" × 4'-8" – 10 CLEATS 1/2" × 3/4" × 12 1/2" PAINT WITH BLACK ACID RESISTING PAINT. TO BE FURNISHED WITH CASE IN LOOSE BUNDLE.
8. SHELF TO BE ORDERED SEPARATELY IF REQUIRED

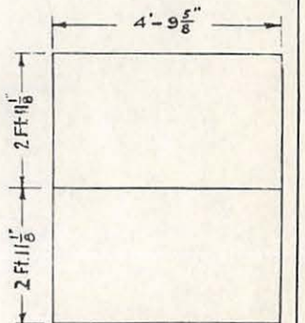


SECTION X-X



SECTION Y-Y





ARRANGEMENT OF BACK BOARDS

BOSTON AND MAINE R.R.
STANDARD RELAY HOUSING
2 DOOR TYPE (P56)

APPROVED:–
W. W. Hartzell
ENGINEER OF SIGNALS AND COMMUNICATIONS

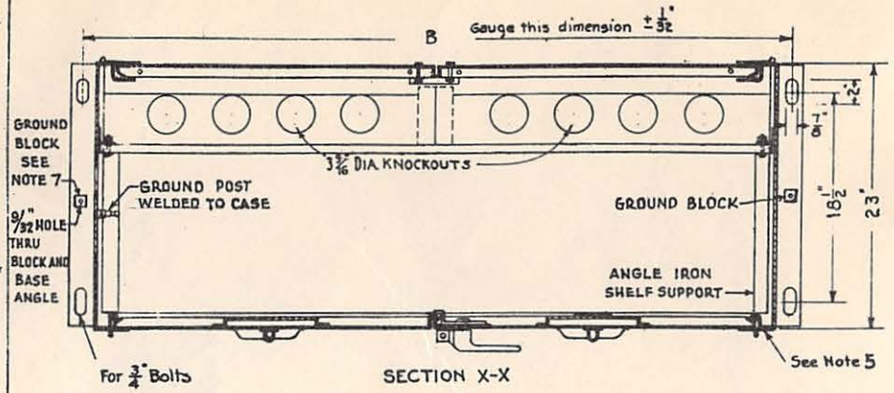
S. G. Phillipps
VICE PRESIDENT - ENGINEERING

PLAN	
Drawn By	M.E.
Checked By	J.J.C.
Correct	C.M.F.

ISSUE	DATE
A	2-1-39
B	4-17-48
C	3-7-49

B = Rev. Notes etc.
C = Rev. to cover P56-1 Housing

P 56



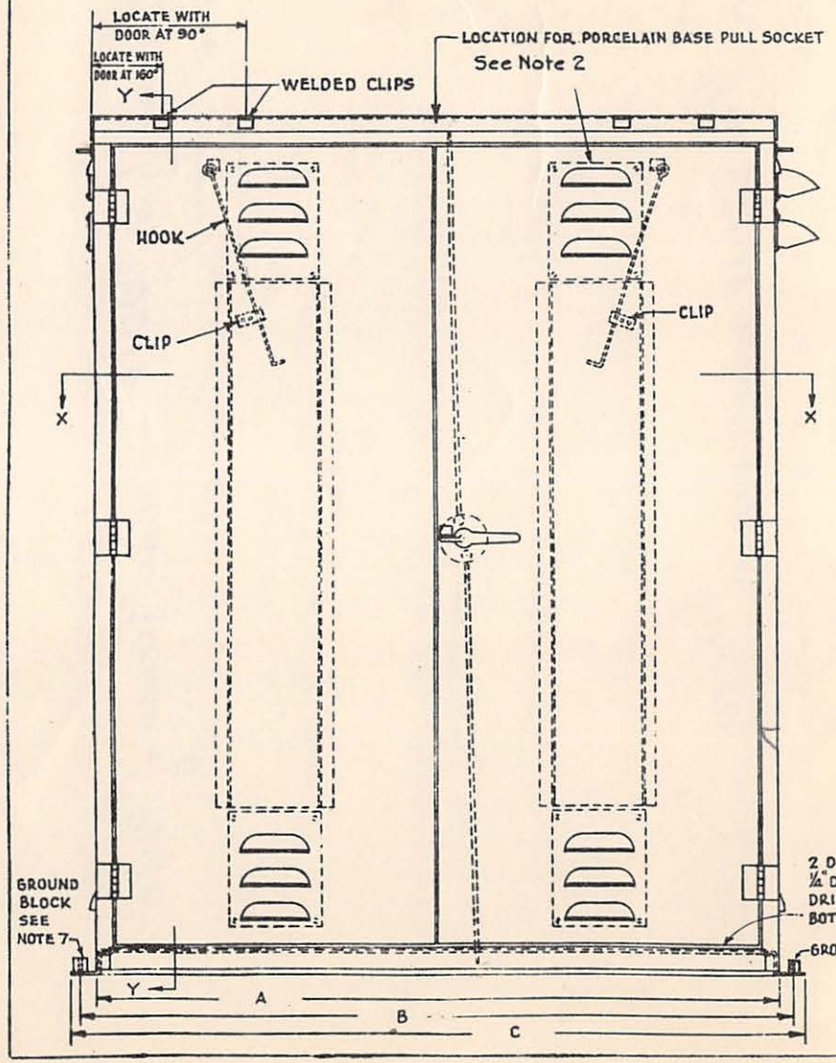
SECTION X-X

PAINTING

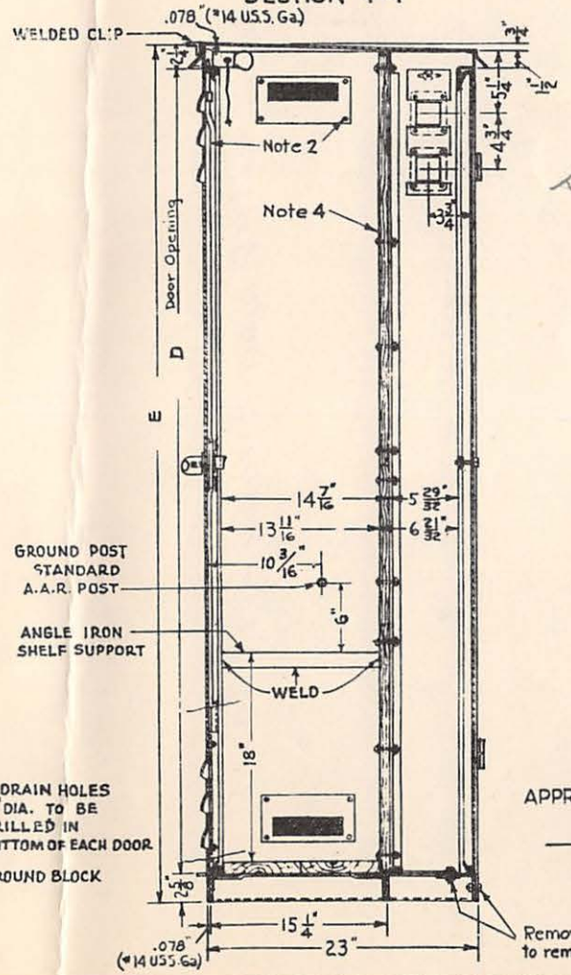
(A) ALL STEEL TO HAVE ONE COAT OF RED OXIDE PRIMER AND ONE FINISH COAT OF ALUMINUM PAINT, INSIDE AND OUTSIDE, BEFORE ASSEMBLING FLOOR, BACK BOARDS AND CELOTEX
(B) BACK BOARDS TO HAVE TWO COATS OF CLEAR, ACID RESISTING AND HARD DRYING VARNISH ON ALL SIDES AND EDGES.
(C) FLOOR BOARDS TO HAVE TWO COATS OF BLACK ACID RESISTING PAINT.
(D) CELOTEX TO HAVE ONE COAT OF ALUMINUM PAINT AFTER ASSEMBLING

(E) IN PAINTING, CARE MUST BE TAKEN TO AVOID STOPPING UP SCREENS IN VENTILATORS.

NOTE
1. – CASE TO BE WELDED CONSTRUCTION EXCEPT WHERE REMOVABLE MEMBERS ARE SHOWN.
2. – APPLY REMOVABLE NON-RUSTING SCREEN TO ALL VENTILATORS. TO CLOSE VENTILATORS REVERSE SCREEN AND PLATE FROM TOP TO BOTTOM.
3. – RAILROAD TO SPECIFY NUMBER OF COVER PLATES AND ENTRANCE CAPS REQUIRED.
4. – BACKBOARDS TO BE MADE OF 5/8" 5 PLY FIR PLYWOOD.
5. – AFTER FINAL PAINT COAT HAS DRIED AND BEFORE SHIPPING CASE, OIL ALL HINGES AND GREASE BEARING PARTS OF HANDLE AND LATCHING MECHANISM. ALL MOVING PARTS TO OPERATE FREELY.
6. – TOP, 2 SIDES AND DOOR OF FRONT SECTION OF BOX TO BE LINED WITH CELOTEX 1/2" THICK
7. THIS BLOCK IS FOR GROUND CONNECTIONS. HOLES IN BLOCK MUST BE CLEAN AND BRIGHT AND ARE TO BE COATED WITH GREASE FOR SHIPMENT.
8. BATTERY CLEATS OF PINE – 2 CLEATS 1/2" × 3/4" × 6'-6" – 10 CLEATS 1/2" × 3/4" × 12 1/2" PAINT WITH BLACK ACID RESISTING PAINT. TO BE FURNISHED WITH CASE IN LOOSE BUNDLE.

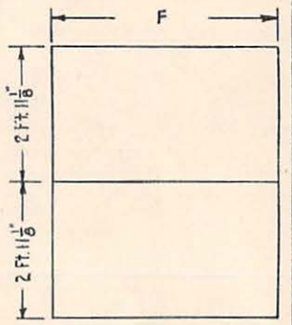


SECTION Y-Y



REF.	P56	P56-1
A	4'-11"	6'-9"
B	5'-1 5/8"	6'-11 1/4"
C	5'-3 15/32"	7'-1 11/32"
D	5'-8 7/8"	5'-6"
E	6'-1 3/4"	6'-1 3/4"
F	4'-9 5/8"	6'-7 5/8"

See other side



ARRANGEMENT OF BACK BOARDS

BOSTON AND MAINE R.R.
STANDARD
RELAY HOUSINGS
2 DOOR TYPE

APPROVED:-

E. M. Fox
ENGINEER OF SIGNALS AND TELEGRAPH

S. J. Phillips
CHIEF ENGINEER

3'3½

D2439 - 156✓ this should be on D2548 series because of PM50
Close up bottom ✓

4'11"

D2439 - 27✓
157✓ this should be on D2548 series because of PM50
162 " " " " " " " " " " "

6'9"

D2439 - 25✓
" 158✓ this should be on D2548 series because of PM50

D2548 - 5
" 6

RECD. JUL 8 - '49 R.R.CO. LETTER JUL 6 - 1949 E. DEPT

PLAN	
DRAWN	C.H.B.
CHECKED	H.E.D.
CORRECT	C.F.G.

ISSUE	DATE
A	4-24-51
B	11-4-58

B = NOTES REVISED

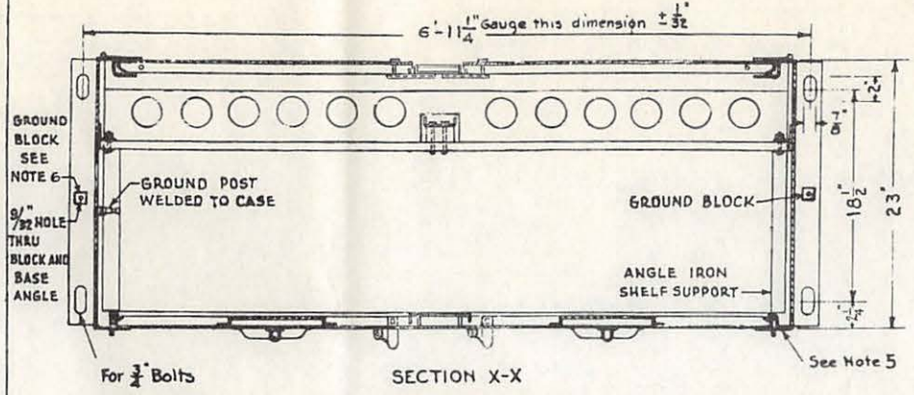
P56-1

PAINTING

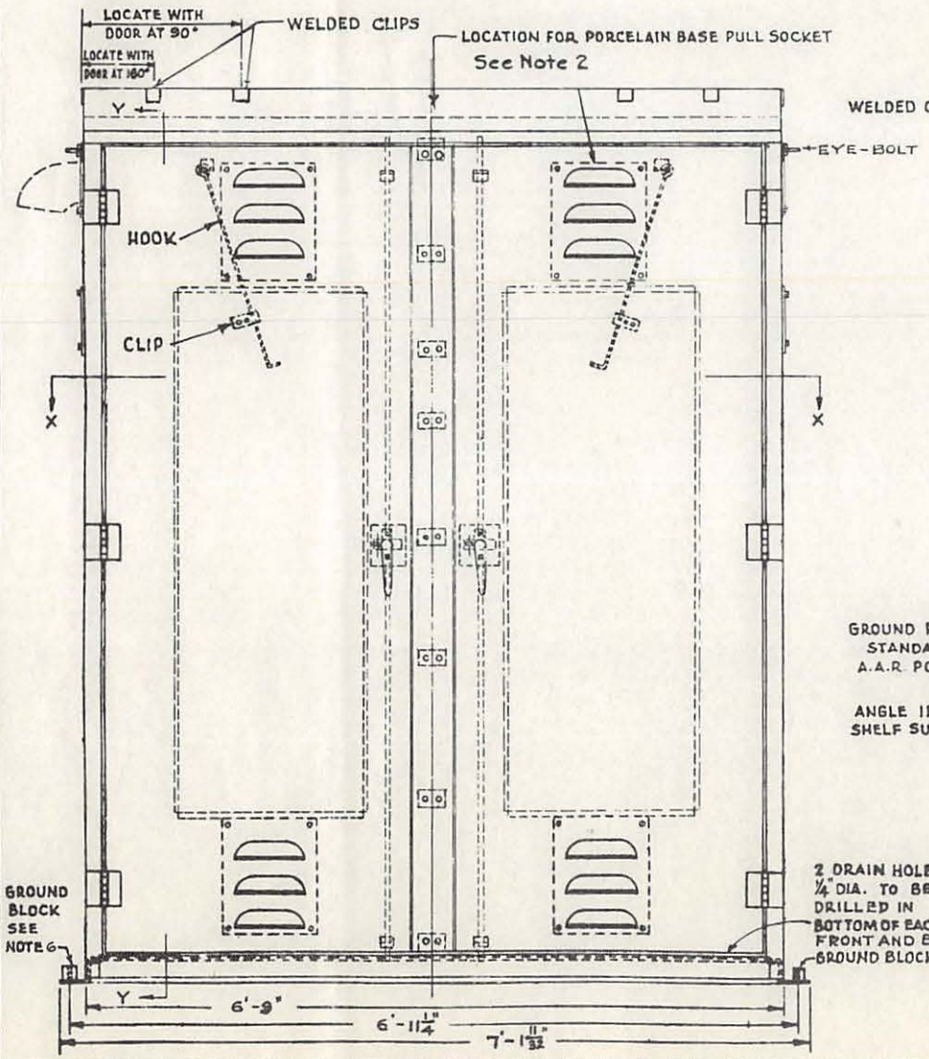
(A) ALL STEEL TO HAVE ONE COAT OF RED OXIDE PRIMER AND ONE FINISH COAT OF ALUMINUM PAINT, INSIDE AND OUTSIDE. BEFORE ASSEMBLING FLOOR AND BACK BOARDS.
(B) BACK BOARDS TO HAVE TWO COATS OF GOOD QUALITY LIGHT GRAY SEMI GLOSS PAINT ON ALL SIDES AND EDGES.
(C) FLOOR BOARDS TO HAVE TWO COATS OF BLACK ACID RESISTING PAINT.

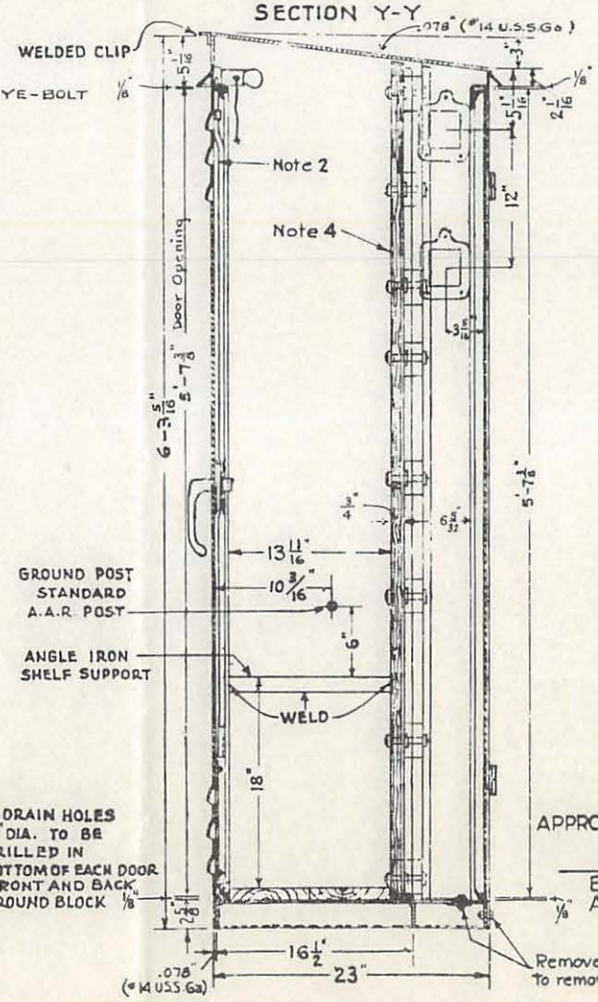
(D) IN PAINTING, CARE MUST BE TAKEN TO AVOID STOPPING UP SCREENS IN VENTILATORS.

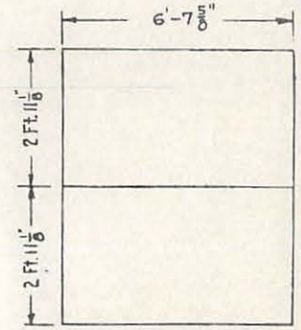
NOTE
1. – CASE TO BE WELDED CONSTRUCTION EXCEPT WHERE REMOVABLE MEMBERS ARE SHOWN.
2. – APPLY REMOVABLE NON-RUSTING SCREEN TO ALL VENTILATORS.
3. – ONE ENTRANCE CAP TO BE SUPPLIED, UNLESS OTHERWISE SPECIFIED.
4. – BACKBOARDS TO BE MADE OF 3/4" 5 PLY EXTERIOR FIR GRADE A-C PLYWOOD.
5. – AFTER FINAL PAINT COAT HAS DRIED AND BEFORE SHIPPING CASE, OIL ALL HINGES AND GREASE BEARING PARTS OF HANDLE AND LATCHING MECHANISM. ALL MOVING PARTS TO OPERATE FREELY.
6. THIS BLOCK IS FOR GROUND CONNECTIONS. HOLES IN BLOCK MUST BE CLEAN AND BRIGHT AND ARE TO BE COATED WITH GREASE FOR SHIPMENT.
7. BATTERY CLEATS OF PINE – 2 CLEATS 1/2" × 3/4" × 6'-6" – 10 CLEATS 1/2" × 3/4" × 12 1/2" PAINT WITH BLACK ACID RESISTING PAINT. TO BE FURNISHED WITH CASE IN LOOSE BUNDLE.
8. SHELF TO BE ORDERED SEPARATELY IF REQUIRED.



SECTION X-X







ARRANGEMENT OF BACK BOARDS

BOSTON AND MAINE R.R.
STANDARD
RELAY HOUSING
2 DOOR TYPE
(P56-1)

APPROVED:-

W. W. Hartzell
ENGINEER OF SIGNALS AND COMMUNICATIONS

VICE PRESIDENT - ENGINEERING

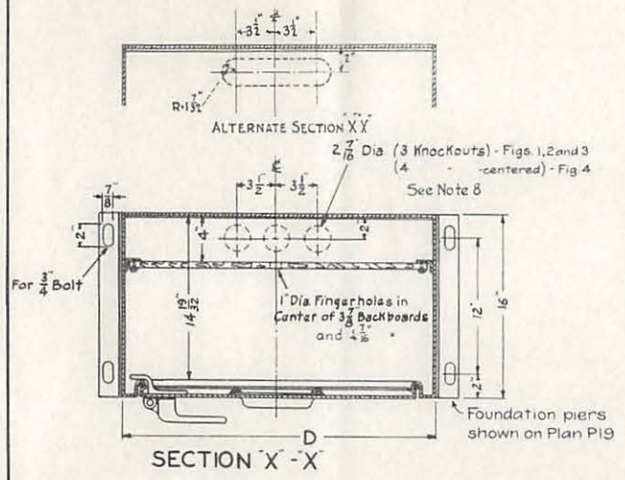
PLAN	
DRAWN BY M.F.	
CHECKED BY J.C.	
CORRECT C.H.F.	
ISSUE	DATE
A	1-25-38
B	3-12-38
C	11-23-38
D	6-15-42
E	11-4-58

"C" - Weights added. Notes revised.
"D" General revision
"E" Notes revised

P57

PAINT ÷ All steel to have One Coat of Red Oxide Primer and One Finish Coat of Aluminum Paint before assembling Plywood Backboards
All Plywood to have Two Coats of Good Quality Light Gray Semi Gloss Paint on all sides and edges before assembling in Housing.
NOTE 1 ÷ Case to be welded construction throughout
NOTE 2 ÷ To close Ventilators, reverse screen and plate from top to bottom.
NOTE 3 ÷ In painting care must be taken to avoid stopping up Screen in Ventilators.
NOTE 4 ÷ One Entrance Cap to be supplied, unless otherwise specified.
NOTE 5 ÷ Brackets and "U" Bolts furnished only when case is pole mounted.
NOTE 6 ÷ Plywood back boards to be furnished.
NOTE 7 ÷ Pipe, Bushings and Locknuts to be furnished by railroad when required. Pipe to be 2" Galv., 3½" long, threaded on end, reamed and chamfered.
NOTE 8 ÷ Oval opening per Alternate Section "X-X" shall be furnished when cable entrance bracket is used.
NOTE 9 ÷ Backboards installed with round head machine screws and washers.

MT'G.	FIG.	A	B	C	D	E	F
BASE	1	—	2 Ft. 7"	2 Ft. 5 1/2"	2 Ft. 3"	2 Ft. 8 1/2"	—
	2	—	2 Ft. 7"	2 Ft. 5 1/2"	2 Ft. 3"	3 Ft. 10 1/2"	—
	3	—	3 Ft. 1 7/8"	3 Ft. 0 3/8"	2 Ft. 9 7/8"	4 Ft. 3 1/2"	—
	4	—	3 Ft. 1 7/8"	3 Ft. 0 3/8"	2 Ft. 9 7/8"	5 Ft. 0 1/2"	—
POLE	1	17/32" Drill	2 Ft. 7"	2 Ft. 5 1/2"	2 Ft. 3"	2 Ft. 8 1/2"	2 Ft. 2 3/4"
	2	17/32" Drill	2 Ft. 7"	2 Ft. 5 1/2"	2 Ft. 3"	3 Ft. 10 1/2"	3 Ft. 4 1/2"
	3	17/32" Drill	3 Ft. 1 7/8"	3 Ft. 0 3/8"	2 Ft. 9 7/8"	4 Ft. 3 1/2"	3 Ft. 9 3/4"
	4	17/32" Drill	3 Ft. 1 7/8"	3 Ft. 0 3/8"	2 Ft. 9 7/8"	5 Ft. 6 1/2"	5 Ft. 0 1/2"


ALTERNATE SECTION "X-X"
R-1 3/32"
2 7/16" Dia. (3 Knockouts) - Figs. 1, 2 and 3
(4 - -centered) - Fig. 4
See Note 8
For 1/4" Bolt
1" Dia. Finger holes in Center of 3 7/8" Backboards and 4 1/16"
Foundation piers shown on Plan P19
SECTION "X"-"X"

BACKBOARD ARRANGEMENTS

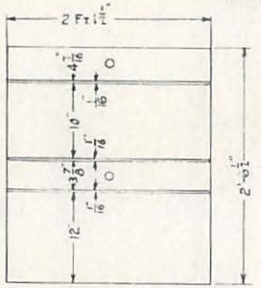


FIG. 1

FIG. 1A;- Same as above except board widths reading from top to bottom are;- 10" - 3 7/8" - 12" - 4 1/16"

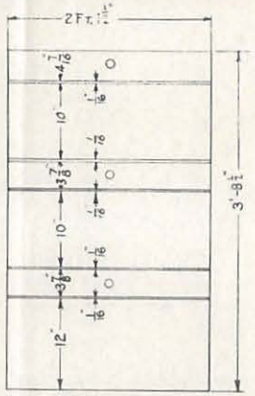
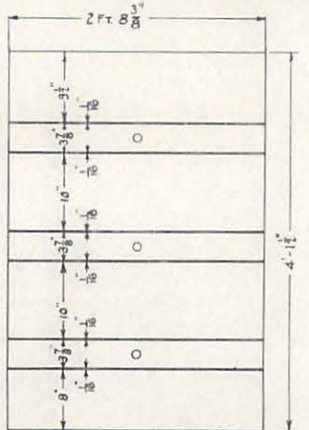


FIG. 2



POLE
FIG 3
To be used with 3 or 4 Section (as required) Crossing Signal Foundation - Plan P16
Clamp with bolt to be ordered as required.
7'-0" Pole complete with cap and base:-
Fig. 5 with hole "G" for Fig. 1, 2, 3
" 6 " " "G" for Fig. 4
" 7 for Fig. 1, 2, 3
" 8 " Fig. 4

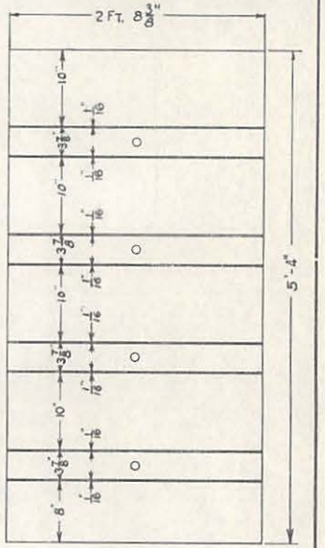
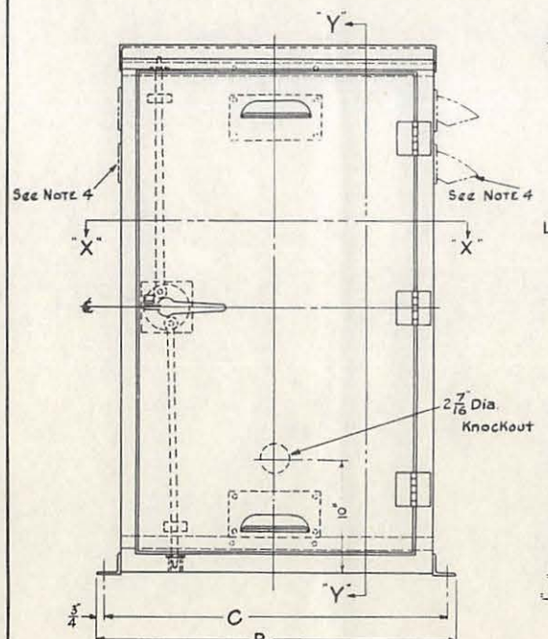
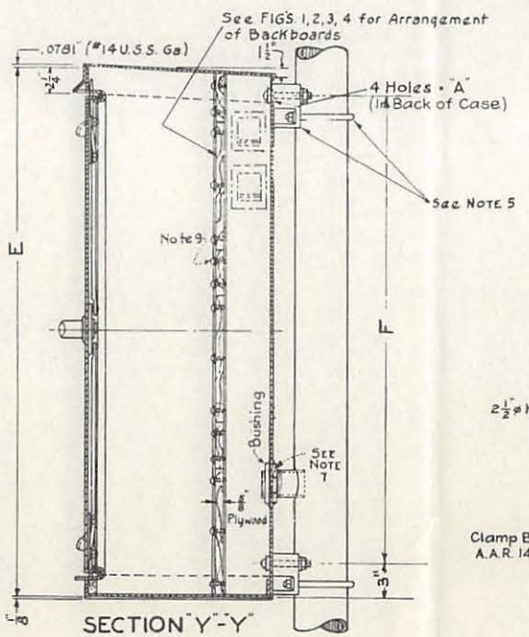
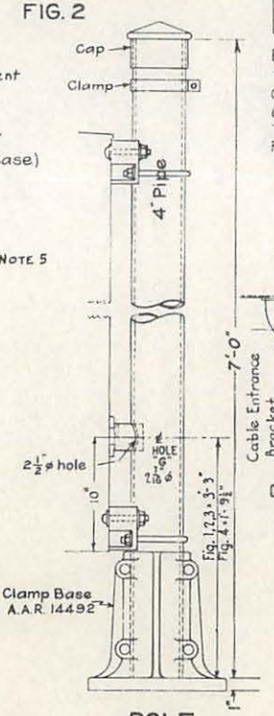
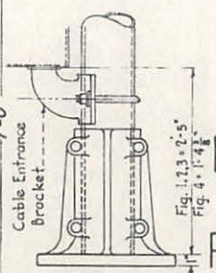


FIG. 4









APPROX. WEIGHTS – LBS.				
	CASE		MAX. APPARATUS	TOTAL
FIG. 1	119		48	167
" 2	145		87	232
" 3	198		160	358
" 4	240		225	465

BOSTON AND MAINE R.R.
STANDARD RELAY HOUSING

APPROVED:-

W. W Hartzell
ENGINEER OF SIGNALS AND COMMUNICATIONS

VICE-PRESIDENT - ENGINEERING

PLAN	
Drawn By M.F.	
Checked By H.G.C.	
Correct C.M.F.	

ISSUE	DATE
A	1-25-38
B	3-12-38
C	11-23-38
D	6-15-42

"C" - Weights added. Notes revised.
"D" General revision

P57

PAINT ÷ All steel to have One Coat of Red Oxide Primer and One Finish Coat of Aluminum Paint before assembling Plywood Backboards and Celotex. All Plywood to have Two Coats of TuVar Varnish before assembling in Housing. Celotex to have one coat of aluminum paint after assembling.

NOTE 1 ÷ Case to be welded construction throughout

NOTE 2 ÷ To close Ventilators, reverse screen and plate from top to bottom.

NOTE 3 ÷ In painting care must be taken to avoid stopping up Screen in Ventilators.

NOTE 4 ÷ Railroad to specify number of cover plates and entrance caps required.

NOTE 5 ÷ Brackets and "U" Bolts furnished only when case is pole mounted.

NOTE 6 ÷ Top, bottom, 2 Sides and door of front section of box to be lined with celotex $\frac{1}{4}$" thick, Bottom lining to extend just under backboards, Plywood backboards to be furnished.

NOTE 7 ÷ Pipe, Bushings and Locknuts to be furnished by railroad when required. Pipe to be 2" Galv., $3\frac{1}{2}$" long, threaded on end, reamed and champfered.

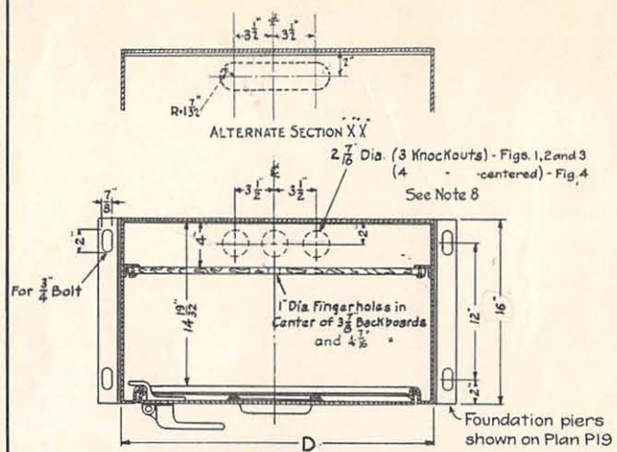
NOTE 8 ÷ Oval opening per Alternate Section "X-X" shall be furnished when cable entrance bracket is used.

NOTE 9 ÷ Backboards installed with round head machine screws and washers.

See other side

MT'G.	FIG.	A	B	C	D	E	F
BASE	1	—	2 Ft. 7"	2 Ft. $5\frac{1}{2}$"	2 Ft. 3"	2 Ft. $8\frac{1}{2}$"	—
	2	—	2 Ft. 7"	2 Ft. $5\frac{1}{2}$"	2 Ft. 3"	3 Ft. $10\frac{1}{2}$"	—
	3	—	3 Ft. $1\frac{7}{8}$"	3 Ft. $0\frac{3}{8}$"	2 Ft. $9\frac{7}{8}$"	4 Ft. $3\frac{1}{2}$"	—
	4	—	3 Ft. $1\frac{7}{8}$"	3 Ft. $0\frac{3}{8}$"	2 Ft. $9\frac{7}{8}$"	5 Ft. $6\frac{1}{2}$"	—
POLE	1	$\frac{17}{32}$" Drill	2 Ft. 7"	2 Ft. $5\frac{1}{2}$"	2 Ft. 3"	2 Ft. $8\frac{1}{2}$"	2 Ft. $2\frac{3}{4}$"
	2	$\frac{17}{32}$" Drill	2 Ft. 7"	2 Ft. $5\frac{1}{2}$"	2 Ft. 3"	3 Ft. $10\frac{1}{2}$"	3 Ft. $4\frac{3}{4}$"
	3	$\frac{17}{32}$" Drill	3 Ft. $1\frac{7}{8}$"	3 Ft. $0\frac{3}{8}$"	2 Ft. $9\frac{7}{8}$"	4 Ft. $3\frac{1}{2}$"	3 Ft. $9\frac{3}{4}$"
	4	$\frac{17}{32}$" Drill	3 Ft. $1\frac{7}{8}$"	3 Ft. $0\frac{3}{8}$"	2 Ft. $9\frac{7}{8}$"	5 Ft. $6\frac{1}{2}$"	5 Ft. $0\frac{1}{4}$"

BACKBOARD ARRANGEMENTS


R-1 3/32"
ALTERNATE SECTION X X
2 7/16 Dia. (3 Knockouts) - Figs. 1, 2 and 3
(4 - -centered) - Fig. 4
See Note 8
For 3/4" Bolt
1" Dia. Fingerholes in Center of 3 7/8 Backboards and 4 7/16 "
Foundation piers shown on Plan P19
D
SECTION "X"-"X"

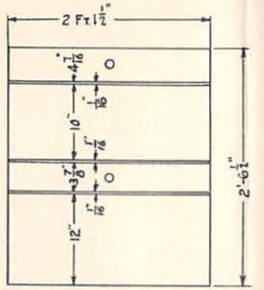


FIG. 1

FIG. 1A ;- Same as above except board widths reading from top to bottom are ;-
10" - 3 7/8" - 12" - 4 7/16"

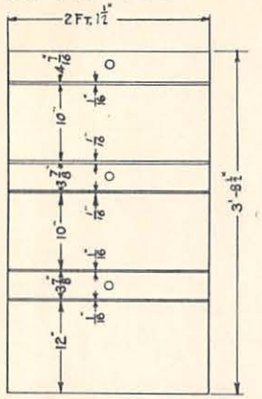


FIG. 2

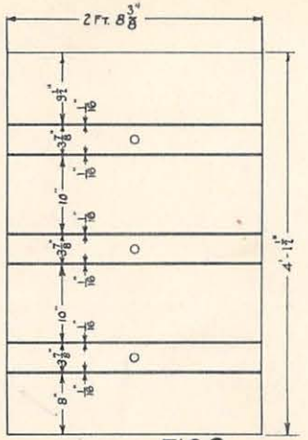


FIG 3

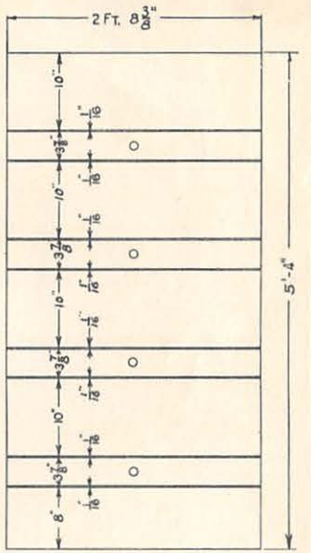
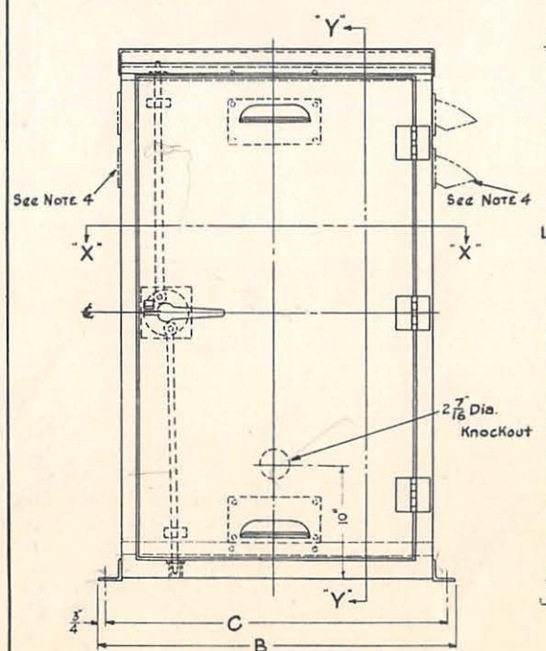
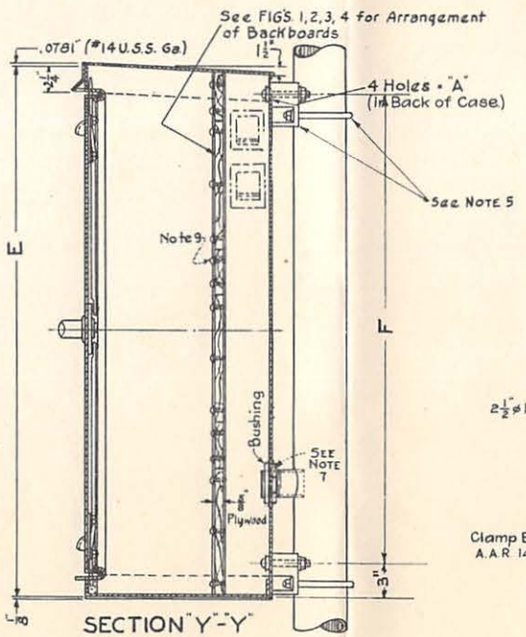
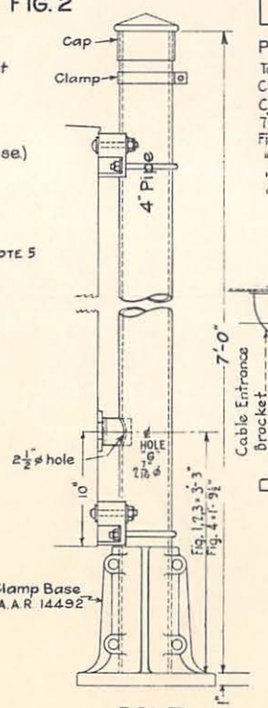


FIG. 4

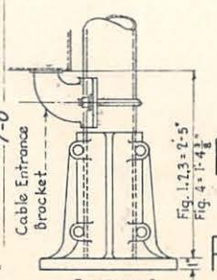






POLE.
FIGS. 5 AND 6

POLE
To be used with 3 or 4 Section (as required) Crossing Signal Foundation-Plan P 16
Clamp with bolt to be ordered as required.
7'-0" Pole complete with cap and base:-
Fig. 5 with hole "G" for Fig. 1, 2, 3
" 6 " " "G" for Fig. 4
" 7 for Fig. 1, 2, 3
" 8 " Fig. 4



FIGS 7 AND 8

APPROX. WEIGHTS — LBS.				
	CASE	CELOTEX LINING	MAX. APPARATUS	TOTAL
FIG. 1	119	9	48	176
" 2	145	12	87	244
" 3	198	15	160	373
" 4	240	18	225	483

BOSTON AND MAINE R.R.
STANDARD RELAY HOUSING

APPROVED:-
O. P. Miller
ENGINEER OF SIGNALS AND TELEGRAPH

CHIEF ENGINEER

2 Panel 2'3"

D2439-83 ✓ latch

3 Panel 2'3"

D2439-89 ✓ latch

" 111 ✓

" 159 ✓

4 Panel 2-7½" (2'9⅞")

D2439-26 ✓

" 29 ✓

5 panel 2'9⅞"

D2439-90 ✓

RECD. JUL 8 - '49 R.R.CO. LETTER JUL 6 - 1949 E. DEPT

PLAN	
Drawn By M.E.	
Checked By H.E.C.	
Correct C.M.F.	
ISSUE	DATE
A	2-1-39
B	4-17-48
C	3-7-49
D	11-4-58

B=Rev. Notes etc.
C= " " "
D=Notes revised.

PAINTING

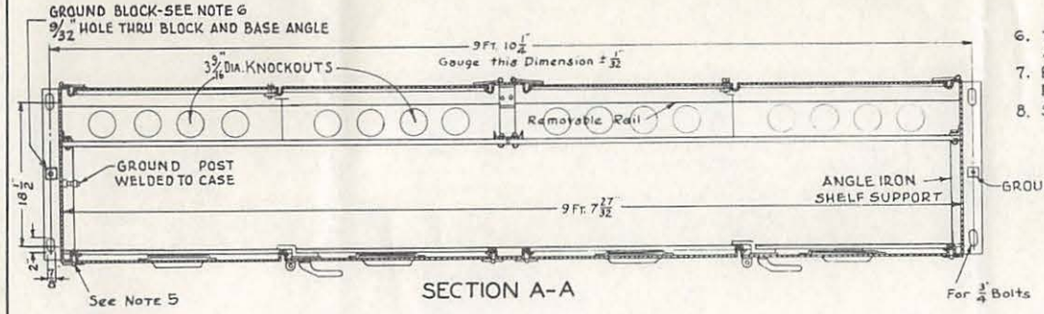
(A) ALL STEEL TO HAVE ONE COAT OF RED OXIDE PRIMER AND ONE FINISH COAT OF ALUMINUM PAINT, INSIDE AND OUTSIDE, BEFORE ASSEMBLING SHELF, FLOOR AND BACK BOARDS

(B) BACKBOARDS TO HAVE TWO COATS OF GOOD QUALITY LIGHT GRAY SEMI GLOSS PAINT ON ALL SIDES AND EDGES.

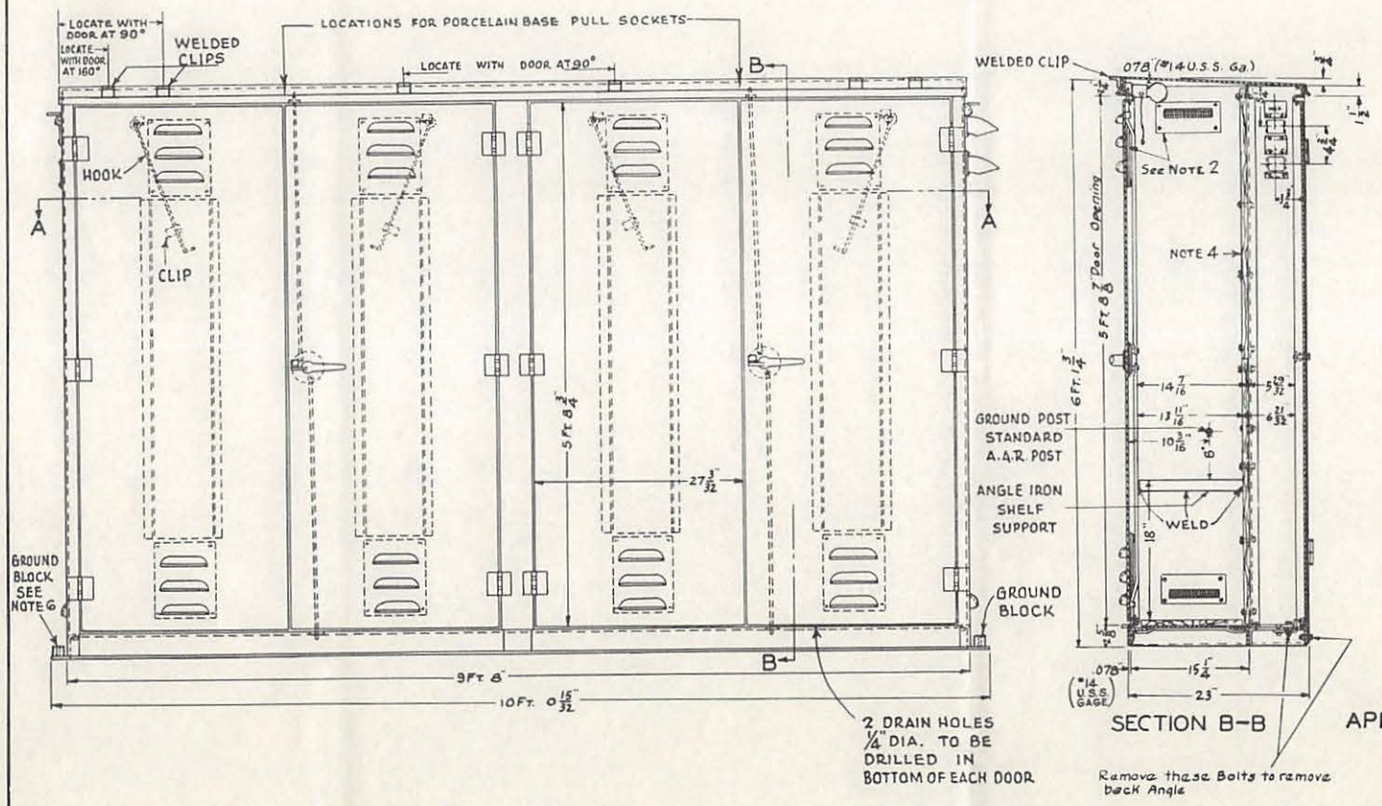
(C) FLOOR BOARDS TO HAVE TWO COATS OF BLACK ACID RESISTING PAINT

(D) IN PAINTING, CARE MUST BE TAKEN TO AVOID STOPPING UP SCREENS IN VENTILATORS.

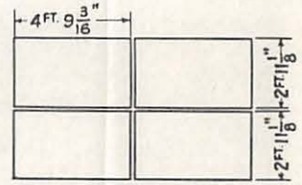
NOTE
1. CASE TO BE WELDED CONSTRUCTION EXCEPT WHERE REMOVABLE MEMBERS ARE SHOWN.
2. APPLY REMOVABLE NON-RUSTING SCREEN TO ALL VENTILATORS. TO CLOSE VENTILATORS REVERSE SCREEN AND PLATE FROM TOP TO BOTTOM.
3. ONE ENTRANCE CAP TO BE SUPPLIED, UNLESS OTHERWISE SPECIFIED.
4. BACK BOARDS TO BE MADE OF 5/8" 5 PLY EXTERIOR FIR GRADE A-C PLYWOOD.
5. AFTER FINAL PAINT COAT HAS DRIED AND BEFORE SHIPPING CASE, OIL ALL HINGES AND GREASE BEARING PARTS OF HANDLE AND LATCHING MECHANISM. ALL MOVING PARTS TO OPERATE FREELY.
6. THIS BLOCK IS FOR GROUND CONNECTIONS. HOLES IN BLOCK MUST BE CLEAN AND BRIGHT AND ARE TO BE COATED WITH GREASE FOR SHIPMENT.
7. BATTERY CLEATS OF PINE – 2 CLEATS 1/2" × 3/4" × 8'-0" 12 CLEATS 1/2" × 3/4" × 12 1/2" PAINT WITH BLACK ACID RESISTING PAINT. TO BE FURNISHED WITH CASE IN LOOSE BUNDLE.
8. SHELF TO BE ORDERED SEPARATELY IF REQUIRED.



SECTION A-A



SECTION B-B



ARRANGEMENT OF BACK BOARDS

BOSTON AND MAINE R.R.
STANDARD RELAY HOUSING
4 DOOR TYPE

APPROVED

W. W. Hartwell
ENGINEER OF SIGNALS AND COMMUNICATIONS

S. T. Phillips
VICE PRESIDENT - ENGINEERING

PLAN	
Drawn By M.E.	
Checked By E.C.	
Correct C.M.F.	
ISSUE	DATE
A	2-1-39
B	4-17-48
C	3-7-49

B=Rev. Notes etc.
C= " " "

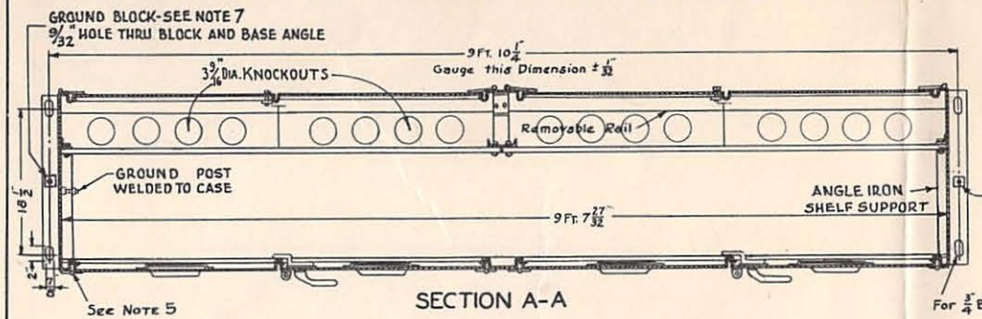
P58

PAINTING

(A) ALL STEEL TO HAVE ONE COAT OF RED OXIDE PRIMER AND ONE FINISH COAT OF ALUMINUM PAINT, INSIDE AND OUTSIDE, BEFORE ASSEMBLING SHELF, FLOOR, BACK BOARDS AND CELOTEX.
(B) BACKBOARDS TO HAVE TWO COATS OF CLEAR, ACID RESISTING AND HARD DRYING VARNISH ON ALL SIDES AND EDGES.
(C) FLOOR BOARDS TO HAVE TWO COATS OF BLACK ACID RESISTING PAINT
(D) CELOTEX TO HAVE ONE COAT OF ALUMINUM PAINT AFTER ASSEMBLING.

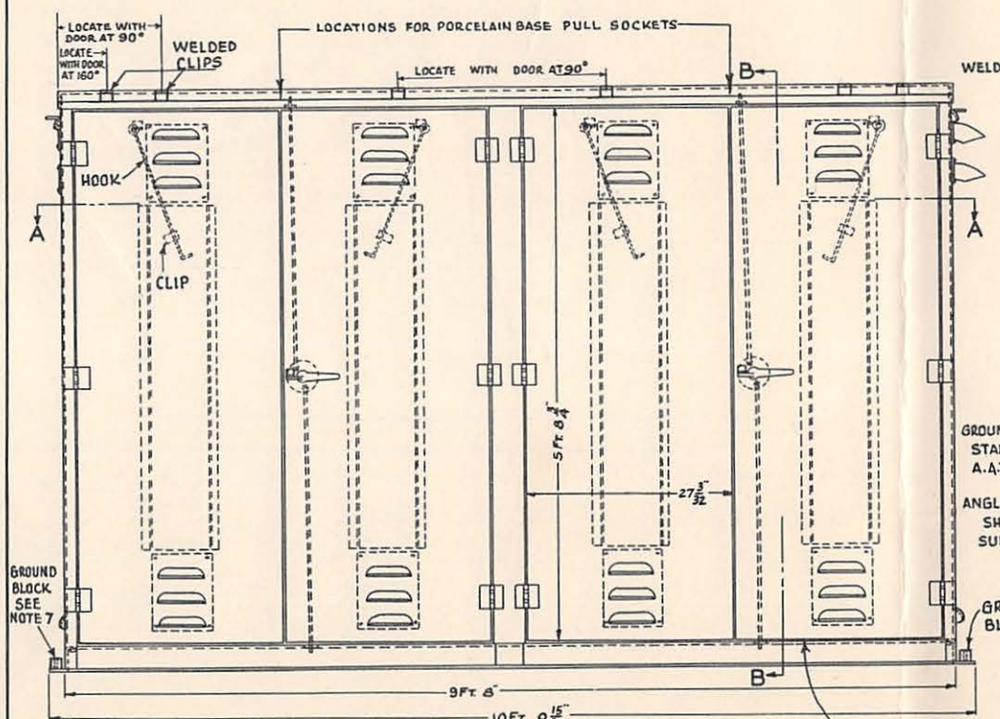
(E) IN PAINTING, CARE MUST BE TAKEN TO AVOID STOPPING UP SCREENS IN VENTILATORS.

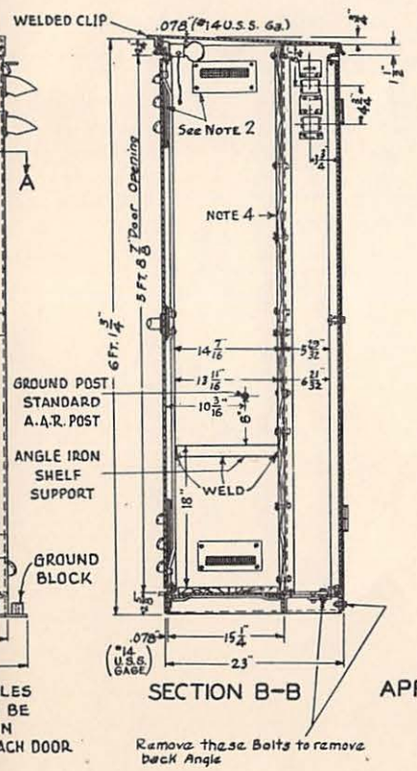
NOTE 1. CASE TO BE WELDED CONSTRUCTION EXCEPT WHERE REMOVABLE MEMBERS ARE SHOWN.
2. APPLY REMOVABLE NON-RUSTING SCREEN TO ALL VENTILATORS. TO CLOSE VENTILATORS REVERSE SCREEN AND PLATE FROM TOP TO BOTTOM.
3. RAILROAD TO SPECIFY NUMBER OF COVER PLATES AND ENTRANCE CAPS REQUIRED.
4. BACK BOARDS TO BE MADE OF 5/8" 5 PLY FIR PLYWOOD.
5. AFTER FINAL PAINT COAT HAS DRIED AND BEFORE SHIPPING CASE, OIL ALL HINGES AND GREASE BEARING PARTS OF HANDLE AND LATCHING MECHANISM. ALL MOVING PARTS TO OPERATE FREELY.
6. TOP, 2 SIDES AND DOOR OF FRONT SECTION OF BOX TO BE LINED WITH CELOTEX 1/2" THICK
7. THIS BLOCK IS FOR GROUND CONNECTIONS. HOLES IN BLOCK MUST BE CLEAN AND BRIGHT AND ARE TO BE COATED WITH GREASE FOR SHIPMENT.
8. BATTERY CLEATS OF PINE – 2 CLEATS 1/2" x 3/4" x 8'-0" - 12 CLEATS 1/2" x 3/4" x 12 1/2" PAINT WITH BLACK ACID RESISTING PAINT. TO BE FURNISHED WITH CASE IN LOOSE BUNDLE.



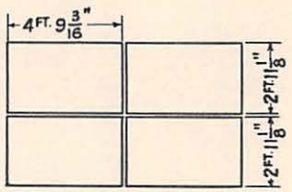
SECTION A-A

See other side





SECTION B-B



ARRANGEMENT OF BACK BOARDS

BOSTON AND MAINE R.R.
STANDARD RELAY HOUSING
4 DOOR TYPE

APPROVED

E. N. For
ENGINEER OF SIGNALS AND TELEGRAPH

CHIEF ENGINEER

PLAN	
DRAWN BY MF	
CHECKED A.B.B	
CORRECT J.J.R	
ISSUE	DATE
B	2-3-36

A 6-5-35
PRELIMINARY

P-70

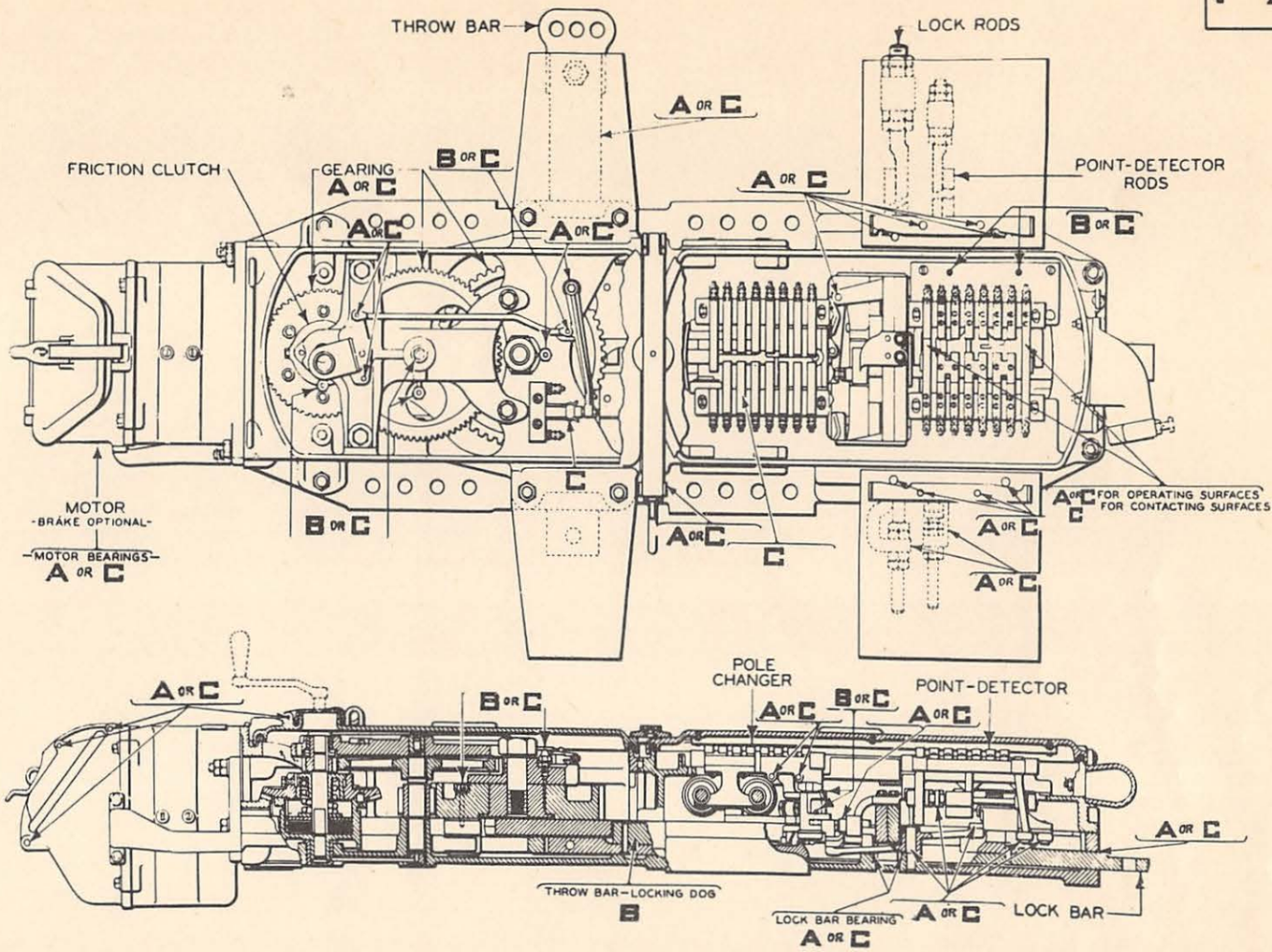
KINDS OF LUBRICANTS

A - LIGHT MACHINE OIL.
USE WHERE INDICATED UNTIL THE TEMPERATURE DROPS TO A POINT WHERE THIS OIL WILL NOT FLOW FREELY FROM AN OIL CAN, AT WHICH TIME START THE USE OF LUBRICANT "C".

B -ALEMITE GREASE (RAILWAY SIGNAL GRADE)
USE WHERE INDICATED FOR TEMPERATURES DOWN TO 0°F. WITH TEMPERATURES BELOW THIS POINT USE LUBRICANT "C".

C - A.R.A. SPECIFICATION OIL 10320.
USE AS INDICATED.

1. WHEN LUBRICATING CONTACTING SURFACES OF SLIDING CONTACTS BE CAREFUL TO REMOVE ANY SURPLUS OIL.
2. WHERE LUBRICANT C IS SPECIFIED DURING LOW TEMPERATURES ITS USE SHOULD BE STARTED SUFFICIENTLY IN ADVANCE OF COLD WEATHER TO WASH OUT OR DILUTE THE HEAVIER LUBRICANT.
3. THE FREQUENCY WITH WHICH SWITCH MACHINES SHOULD BE LUBRICATED DEPENDS A GOOD DEAL ON THE SERVICE REQUIRED OF THEM. FOR FREQUENT OPERATION IT MAY BE NECESSARY TO LUBRICATE THE SWITCH MACHINES ONCE A WEEK, AND FOR INFREQUENT OPERATION ONCE A MONTH MAY BE SUFFICIENT.
4. USE EXTREME CARE WHEN FORCING LUBRICANT INTO BEARINGS WHICH CANNOT BE OBSERVED TO AVOID GETTING GREASE OR OIL INTO PARTS WHERE IT MIGHT CAUSE DAMAGE.
5. READ CAREFULLY THE INSTRUCTIONS GOVERNING THE LUBRICATION OF SWITCH MACHINES IN G.R.S. HANDBOOK NO.14, DATED NOV. 1933, PAGES 80 TO 83 INCLUSIVE.



BOSTON AND MAINE R R

LUBRICATION CHART FOR MODEL-5A SWITCH MACHINE.

APPROVED

SIGNAL ENGINEER

ENGINEER M. OF W.

CHIEF ENGINEER

PLAN	
DRAWN BY MF	
CHECKED A.R.B.	
CORRECT J.J.R.	
ISSUE	DATE
B	2-3-36

A-6-5-35
PRELIMINARY

P-71

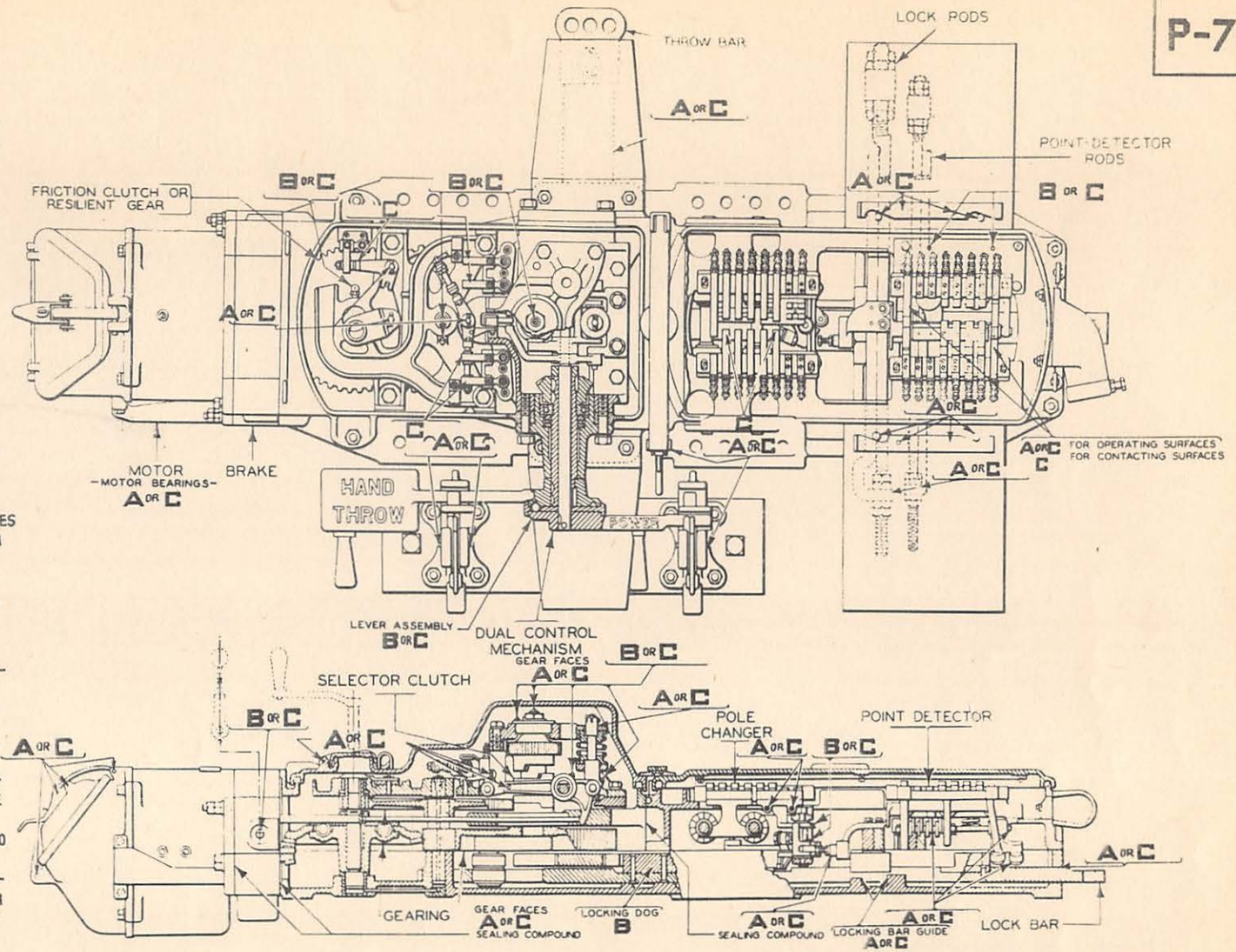
KINDS OF LUBRICANTS

A - LIGHT MACHINE OIL
USE WHERE INDICATED UNTIL THE TEMPERATURE DROPS TO A POINT WHERE THIS OIL WILL NOT FLOW FREELY FROM AN OIL CAN, AT WHICH TIME START THE USE OF LUBRICANT "C".

B - ALEMITE GREASE (RAILWAY SIGNAL GRADE)
USE WHERE INDICATED FOR TEMPERATURES DOWN TO 0°F. WITH TEMPERATURES BELOW THIS POINT USE LUBRICANT "C".

C - A·R·A· SPECIFICATION OIL 10320.
USE AS INDICATED.

1. - WHEN LUBRICATING CONTACTING SURFACES OF SLIDING CONTACTS BE CAREFUL TO REMOVE ANY SURPLUS OIL.
2. - WHERE LUBRICANT "C" IS SPECIFIED DURING LOW TEMPERATURES ITS USE SHOULD BE STARTED SUFFICIENTLY IN ADVANCE OF COLD WEATHER TO WASH OUT OR DILUTE THE HEAVIER LUBRICANT.
3. - THE FREQUENCY WITH WHICH SWITCH MACHINES SHOULD BE LUBRICATED DEPENDS AGOOD DEAL ON THE SERVICE REQUIRED OF THEM. FOR FREQUENT OPERATION IT MAY BE NECESSARY TO LUBRICATE THE SWITCH MACHINES ONCE A WEEK, AND FOR INFREQUENT OPERATION ONCE A MONTH MAY BE SUFFICIENT.
4. - USE EXTREME CARE WHEN FORCING LUBRICANT INTO BEARINGS WHICH CANNOT BE OBSERVED TO AVOID GETTING GREASE OR OIL INTO PARTS WHERE IT MIGHT CAUSE DAMAGE.
5. - THE GREASE FITTING IN THE UPPER END OF THE MAIN CRANK SHAFT PROVIDES FOR LUBRICATING THE ROLLERS ON THE LOWER END OF THE MAIN CRANK SHAFT AS WELL AS THE SLIDING CLUTCH SLEEVE. BEFORE FORCING LUBRICANT INTO THIS FITTING, THE SELECTOR LEVER SHOULD BE PLACED IN THE HAND POSITION AND THE HAND-THROW LEVER OPERATED TO THROW THE SWITCH POINTS. THIS INSURES THAT THE SLIDING CLUTCH IS FULLY ENGAGED, AND THAT THE LUBRICANT WILL REACH THE ROLLS ON THE LOWER END OF THE SHAFT.
6. - READ CAREFULLY THE INSTRUCTIONS GOVERNING THE LUBRICATION OF SWITCH MACHINES IN G.R.S. HANDBOOK NO. 14, DATED NOV. 1933, PAGES 80 TO 83 INCLUSIVE.



BOSTON AND MAINE R.R.

LUBRICATION CHART FOR MODEL-5B SWITCH MACHINE.

APPROVED

SIGNAL ENGINEER

ENGINEER M. OF W.

CHIEF ENGINEER

PLAN	
DRAWN BY MF	
CHECKED A.R.B	
CORRECT J.J.R	
ISSUE	DATE
B	2-3-36

A 6-5-35
PRELIMINARY

P-72

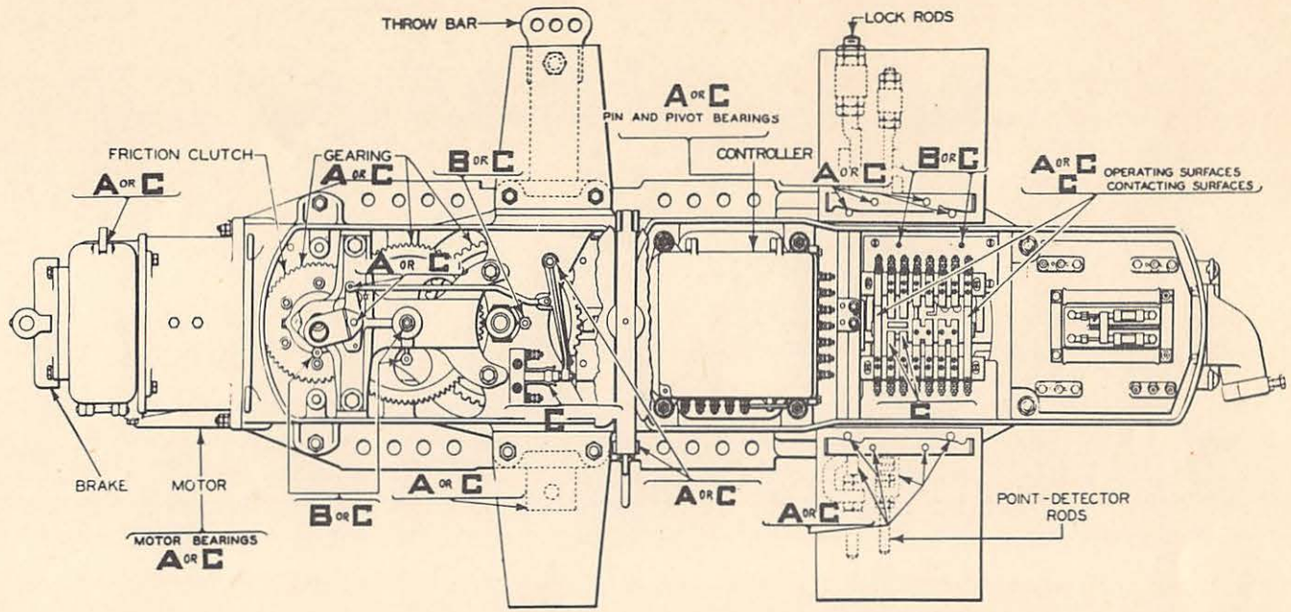
KINDS OF LUBRICANTS.

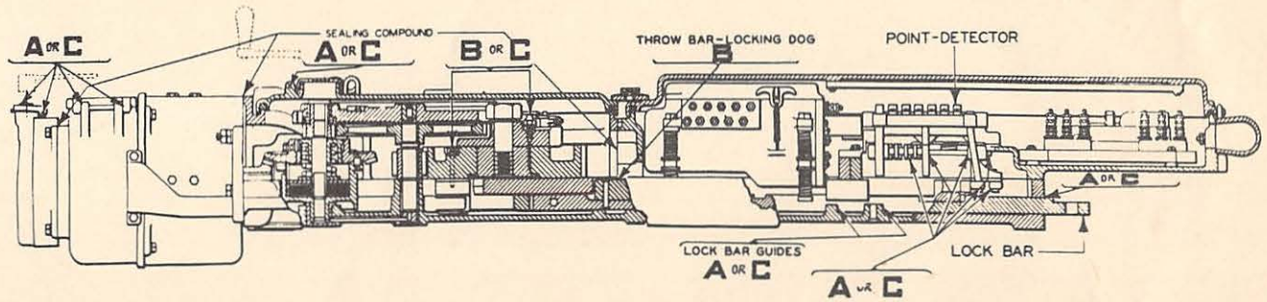
A – LIGHT MACHINE OIL.
USE WHERE INDICATED UNTIL THE TEMPERATURE DROPS TO A POINT WHERE THIS OIL WILL NOT FLOW FREELY FROM AN OIL CAN, AT WHICH TIME START THE USE OF LUBRICANT "C".

B – ALEMITE GREASE (RAILWAY SIGNAL GRADE)
USE WHERE INDICATED FOR TEMPERATURES DOWN TO 0°F. WITH TEMPERATURES BELOW THIS POINT USE LUBRICANT "C".

C – A.R.A. SPECIFICATION OIL 10320.
USE AS INDICATED.

1. WHEN LUBRICATING CONTACTING SURFACES OF SLIDING CONTACTS BE CAREFUL TO REMOVE ANY SURPLUS OIL.
2. WHERE LUBRICANT "C" IS SPECIFIED DURING LOW TEMPERATURES ITS USE SHOULD BE STARTED SUFFICIENTLY IN ADVANCE OF COLD WEATHER TO WASH OUT OR DILUTE THE HEAVIER LUBRICANT.
3. THE FREQUENCY WITH WHICH SWITCH MACHINES SHOULD BE LUBRICATED DEPENDS A GOOD DEAL ON THE SERVICE REQUIRED OF THEM. FOR FREQUENT OPERATION IT MAY BE NECESSARY TO LUBRICATE THE SWITCH MACHINES ONCE A WEEK, AND FOR INFREQUENT OPERATION ONCE A MONTH MAY BE SUFFICIENT.
4. USE EXTREME CARE WHEN FORCING LUBRICANT INTO BEARINGS WHICH CANNOT BE OBSERVED TO AVOID GETTING GREASE OR OIL INTO PARTS WHERE IT MIGHT CAUSE DAMAGE.
5. SHOULD IT BECOME NECESSARY TO REMOVE THE MASTER RELAY ARMATURE THE BALL BEARINGS SHOULD BE THOROUGHLY WASHED OUT WITH BENZINE OR GASOLINE AND LUBRICATED WITH 3 OR 4 DROPS OF NYE'S DELICATE MACHINERY OIL.
6. READ CAREFULLY THE INSTRUCTIONS GOVERNING THE LUBRICATION OF SWITCH MACHINES IN G.R.S. HANDBOOK NO. 14, DATED NOV. 1933, PAGES 80 TO 83 INCLUSIVE.





BOSTON AND MAINE R.R.

LUBRICATION CHART FOR MODEL-5C SWITCH MACHINE.

APPROVED
SIGNAL ENGINEER

ENGINEER M. OF W.

CHIEF ENGINEER

PLAN	
DRAWN BY MF	
CHECKED ARB	
CORRECT J.J.R.	
ISSUE	DATE
B	2-3-36

A-6-5-35
PRELIMINARY

P-73

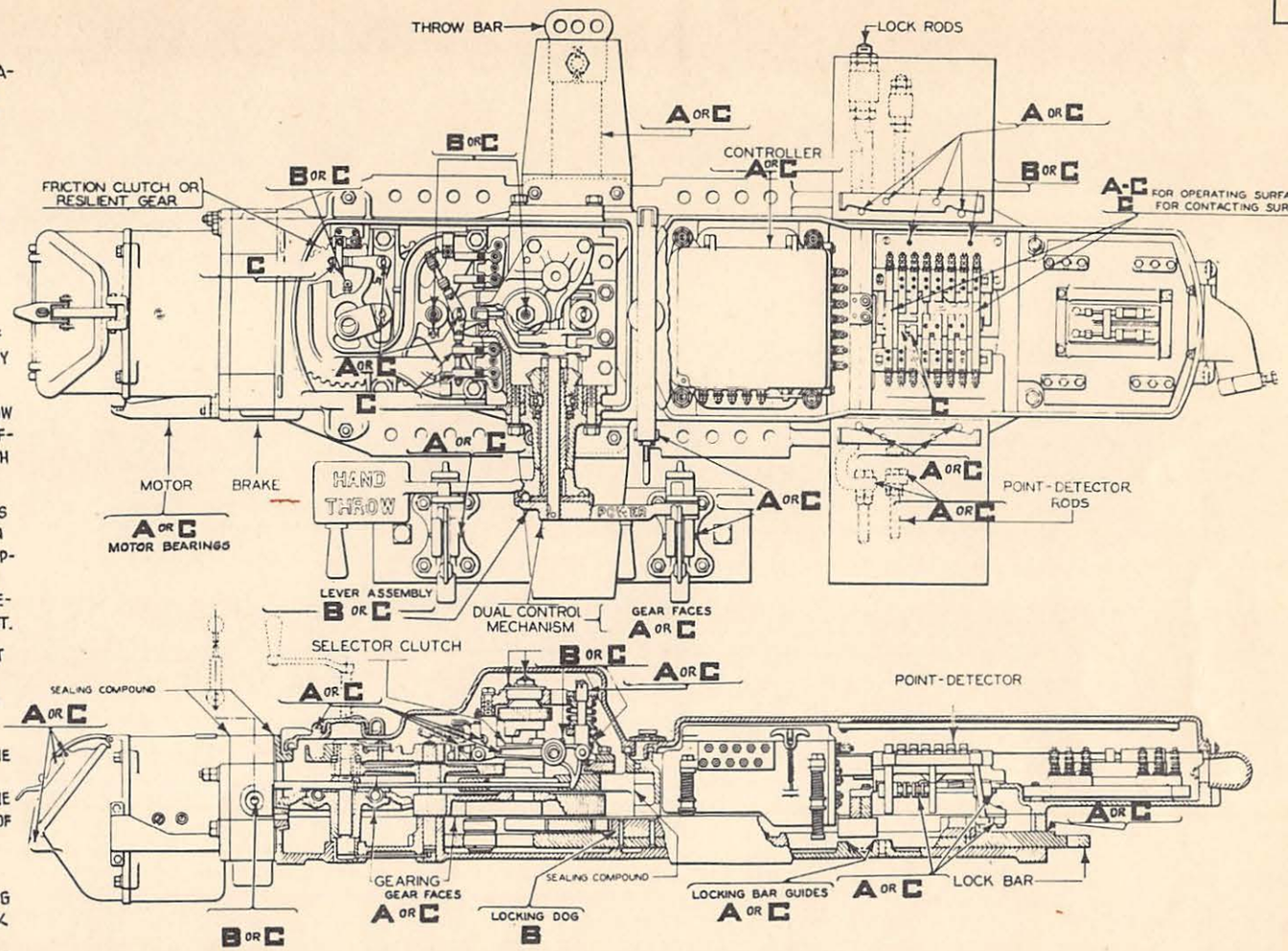
KINDS OF LUBRICANTS.

A – LIGHT MACHINE OIL
USE WHERE INDICATED UNTIL THE TEMPERATURE DROPS TO A POINT WHERE THIS OIL WILL NOT FLOW FREELY FROM AN OIL CAN, AT WHICH TIME START THE USE OF LUBRICANT "C".

B – ALEMITE GREASE (RAILWAY SIGNAL GRADE)
USE WHERE INDICATED FOR TEMPERATURES DOWN TO 0°F. WITH TEMPERATURES BELOW THIS POINT USE LUBRICANT "C".

C – A.R.A. SPECIFICATION OIL 10320.
USE AS INDICATED

1. WHEN LUBRICATING CONTACTING SURFACES OF SLIDING CONTACTS BE CAREFUL TO REMOVE ANY SURPLUS OIL.
2. WHERE LUBRICANT "C" IS SPECIFIED DURING LOW TEMPERATURES ITS USE SHOULD BE STARTED SUFFICIENTLY IN ADVANCE OF COLD WEATHER TO WASH OUT OR DILUTE THE HEAVIER LUBRICANT.
3. THE FREQUENCY WITH WHICH SWITCH MACHINES SHOULD BE LUBRICATED DEPENDS A GOOD DEAL ON THE SERVICE REQUIRED OF THEM. FOR FREQUENT OPERATION IT MAY BE NECESSARY TO LUBRICATE THE SWITCH MACHINES ONCE A WEEK, AND FOR INFREQUENT OPERATION ONCE A MONTH MAY BE SUFFICIENT.
4. USE EXTREME CARE WHEN FORCING LUBRICANT INTO BEARINGS WHICH CANNOT BE OBSERVED TO AVOID GETTING GREASE OR OIL INTO PARTS WHERE IT MIGHT CAUSE DAMAGE.
5. SHOULD IT BECOME NECESSARY TO REMOVE THE MASTER RELAY ARMATURE THE BALL BEARINGS SHOULD BE THOROUGHLY WASHED OUT WITH BENZINE OR GASOLINE AND LUBRICATED WITH 3 OR 4 DROPS OF NYE'S DELICATE MACHINERY OIL.
6. THE GREASE FITTING IN THE UPPER END OF THE MAIN CRANK SHAFT PROVIDES FOR LUBRICATING THE ROLLERS ON THE LOWER END OF THE MAIN CRANK SHAFT AS WELL AS THE SLIDING CLUTCH SLEEVE. BEFORE FORCING LUBRICANT INTO THIS FITTING THE SELECTOR LEVER SHOULD BE PLACED IN THE HAND POSITION AND THE HAND-THROW LEVER OPERATED TO THROW THE SWITCH POINTS. THIS INSURES THAT THE SLIDING CLUTCH IS FULLY ENGAGED, AND THAT THE LUBRICANT WILL REACH THE ROLLS ON THE LOWER END OF THE SHAFT.
7. READ CAREFULLY THE INSTRUCTIONS GOVERNING THE LUBRICATION OF SWITCH MACHINES IN G·R·S· HANDBOOK NO. 14, DATED NOV. 1933, PAGES 80 TO 83 INCLUSIVE.



BOSTON AND MAINE R.R.

LUBRICATION CHART FOR MODEL-SD SWITCH MACHINE.

APPROVED
J.H. Mullen
SIGNAL ENGINEER

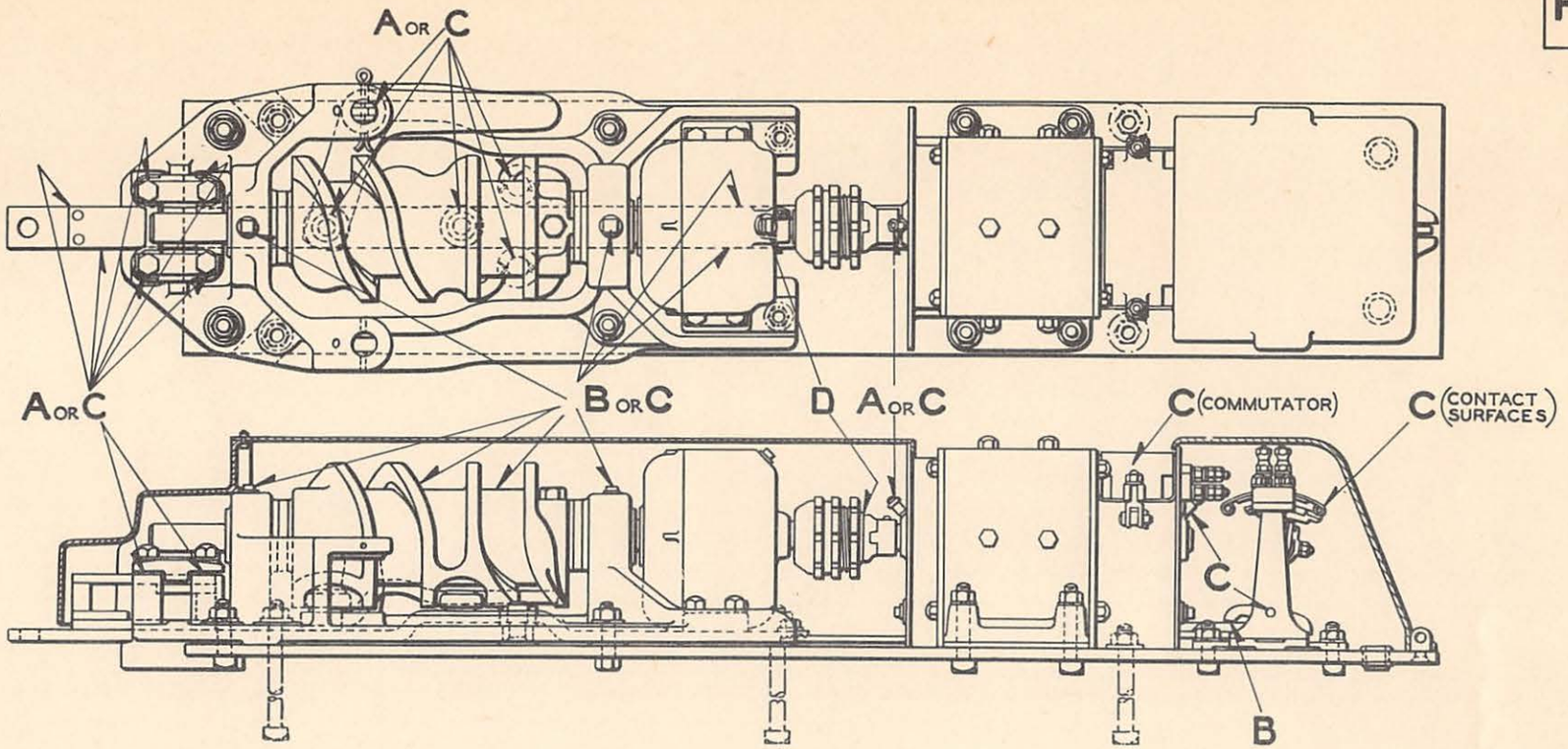
F.F. Fifield
ENGINEER M. OF W.

M. Bartlett
CHIEF ENGINEER

PLAN	
DRAWN BY MF	
CHECKED A.R.B.	
CORRECT J.J.F.	
ISSUE	DATE
B	2-3-36

A-6-5-35
PRELIMINARY

P-74



KINDS OF LUBRICANTS

A – LIGHT MACHINE OIL
USE WHERE INDICATED UNTIL THE TEMPERATURE DROPS TO A POINT WHERE THIS OIL WILL NOT FLOW FREELY FROM AN OIL CAN, AT WHICH TIME START THE USE OF LUBRICANT "C".

B – ALEMITE GREASE (RAILWAY SIGNAL GRADE).
USE WHERE INDICATED FOR TEMPERATURES DOWN TO 0°F. WITH TEMPERATURES BELOW THIS POINT USE LUBRICANT "C".

C – A.R.A. SPECIFICATION OIL 10320.
USE WHERE INDICATED.

D – DIXONS NO.1 GRAPHITE CUP GREASE.
USE WHERE INDICATED

1. WHEN LUBRICATING CONTACTING SURFACES OF SLIDING CONTACTS BE CAREFUL TO REMOVE ANY SURPLUS OIL.
2. WHERE LUBRICANT "C" IS SPECIFIED DURING LOW TEMPERATURES ITS USE SHOULD BE STARTED SUFFICIENTLY IN ADVANCE OF COLD WEATHER TO WASH OUT OR DILUTE THE HEAVIER LUBRICANT.
3. THE FREQUENCY WITH WHICH SWITCH MACHINES SHOULD BE LUBRICATED DEPENDS A GOOD DEAL ON THE SERVICE REQUIRED. FOR FREQUENT OPERATION IT MAY BE NECESSARY TO LUBRICATE THE SWITCH MACHINES ONCE A WEEK AND FOR INFREQUENT OPERATION ONCE A MONTH MAY BE SUFFICIENT.
4. CLEAN THE CONE CLUTCH PERIODICALLY AND REPACK.
5. REPLENISH GREASE IN GEAR-BOX AS FOUND NECESSARY AND PERIODICALLY CLEAN AND REPACK.
6. APPLY LUBRICANT WITH A BRUSH TO THE WORKING SURFACE OF THE OPERATING CAM, SLIDE BAR, LOCK ROD, ROLLERS, CIRCUIT CONTROLLER CAM AND ANY EXPOSED FINISHED SURFACES.
7. WIPE COMMUTATOR WITH A CLOTH CONTAINING A SLIGHT AMOUNT OF OIL IF BRUSHES SQUEAK OR CHATTER.

BOSTON AND MAINE R.R.

LUBRICATION CHART FOR STYLE B-3 ELECTRIC SWITCH AND LOCK MOVEMENT.

APPROVED

SIGNAL ENGINEER

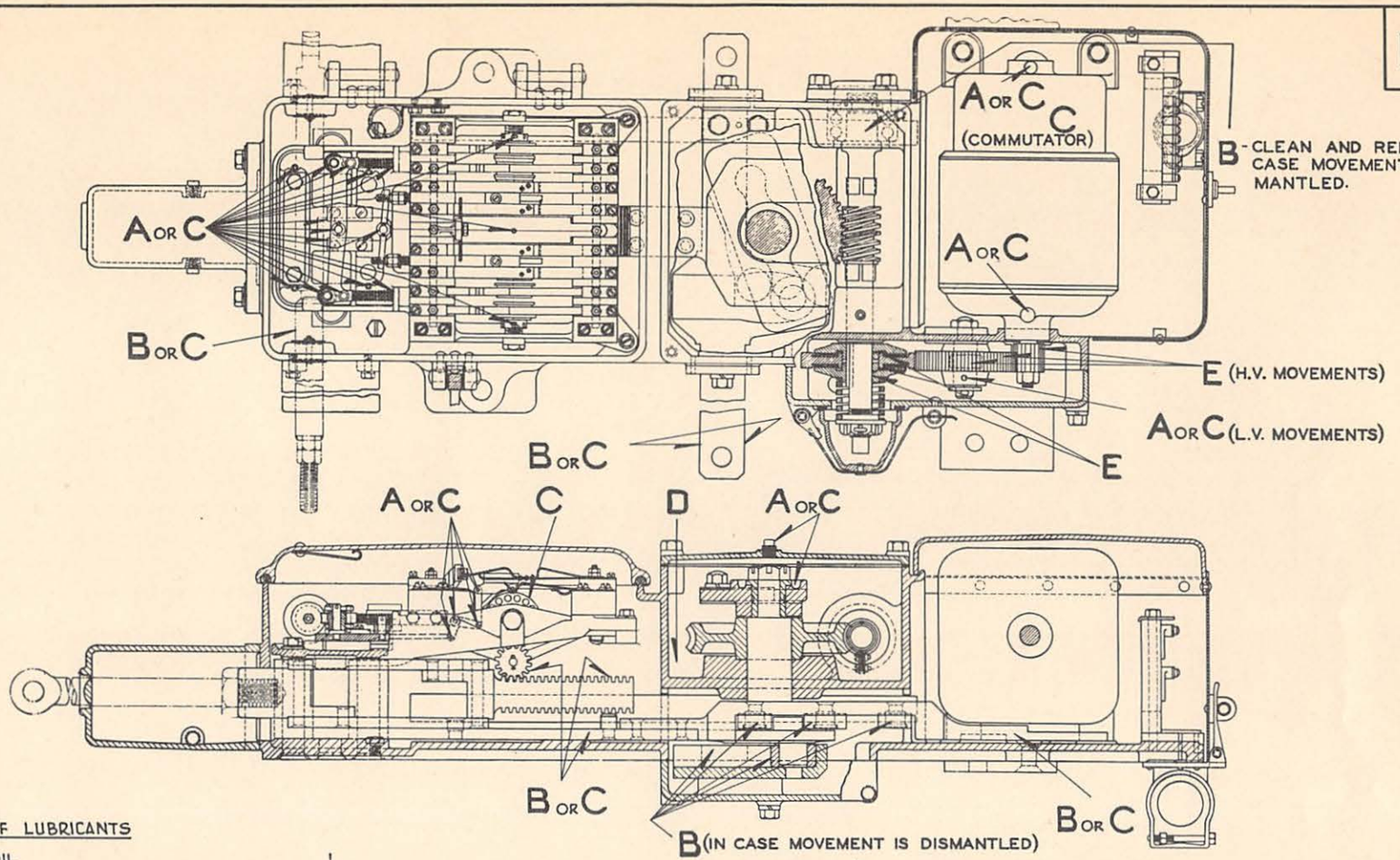
ENGINEER M. OF W

CHIEF ENGINEER

PLAN	
DRAWN BY MF	
CHECKED A.R.B.	
CORRECT J.J.R.	
ISSUE	DATE
B	2-3-36

A 6-5-35
PRELIMINARY

P-75



B - CLEAN AND REPACK IN CASE MOVEMENT IS DISMANTLED.

E (H.V. MOVEMENTS)

A OR C (L.V. MOVEMENTS)

KINDS OF LUBRICANTS

A - LIGHT MACHINE OIL
USE WHERE INDICATED UNTIL THE TEMPERATURE DROPS TO A POINT WHERE THE OIL WILL NOT FLOW FREELY FROM THE OIL CAN, AT WHICH TIME START THE USE OF LUBRICANT "C".

B - ALEMITE GREASE (RAILWAY SIGNAL GRADE)
USE WHERE INDICATED FOR TEMPERATURES DOWN TO 0°F. WITH TEMPERATURES BELOW THAT POINT USE LUBRICANT "C".

C - A.R.A. SPECIFICATION OIL 10320.
USE WHERE INDICATED.

D - TEXACO STARZON "C"
USE WHERE INDICATED.

E - DIXON BRAKE CYLINDER LUBRICANT.
USE WHERE INDICATED.

1. WHEN LUBRICATING CONTACTING SURFACES OF SLIDING CONTACTS BE CAREFUL TO REMOVE ANY SURPLUS OIL.
2. WHERE LUBRICANT "C" IS SPECIFIED DURING LOW TEMPERATURES, ITS USE SHOULD BE STARTED SUFFICIENTLY IN ADVANCE OF COLD WEATHER TO WASH OUT OR DILUTE THE HEAVIER LUBRICANT.
3. THE FREQUENCY WITH WHICH SWITCH MACHINES SHOULD BE LUBRICATED DEPENDS A GOOD DEAL ON THE SERVICE REQUIRED OF THEM. FOR FREQUENT OPERATION IT MAY BE NECESSARY TO LUBRICATE THE SWITCH MACHINES ONCE A WEEK, AND FOR INFREQUENT OPERATION ONCE A MONTH MAY BE SUFFICIENT.
4. USE EXTREME CARE WHEN FORCING LUBRICANT INTO BEARINGS, WHICH CANNOT BE OBSERVED, TO AVOID GETTING GREASE OR OIL INTO PARTS WHERE IT MIGHT CAUSE DAMAGE.
5. DURING WINTER THE LUBRICANT USED IN THE WORM GEAR COMPARTMENT SHOULD BE TEXACO STARZON "BB" INSTEAD OF TEXACO STARZON "C"
6. EXTREME CARE MUST BE TAKEN TO DRAIN OUT THE THIN LUBRICANT USED DURING WINTER, FROM THE WORM GEAR COMPARTMENT BEFORE PUTTING IN THE REGULAR LUBRICANT FOR SUMMER USE
7. THE RECESSES PROVIDED IN THE HUBS OF THE SPUR GEARS ON THE HIGH VOLTAGE SWITCH MACHINES SHOULD BE KEPT PACKED WITH GREASE AS INDICATED. TAKE CARE TO REMOVE ANY EXCESS GREASE FROM THE CLUTCH FACING.
8. APPLY A LIGHT FILM OF OIL ON ALL CONTACT SEGMENTS AT FREQUENT INTERVALS AFTER THOROUGHLY CLEANING.
9. WIPE COMMUTATOR WITH CLOTH CONTAINING A SMALL AMOUNT OF OIL IF BRUSHES SQUEAL OR CHATTER.
10. READ CAREFULLY THE INSTRUCTIONS GOVERNING THE LUBRICATION OF SWITCH MACHINES IN THE U.S.&S. CO.'S INSTRUCTION PAMPHLET U-5016.

BOSTON AND MAINE R.R.

LUBRICATION CHART FOR STYLE "M" ELECTRIC SWITCH AND LOCK MOVEMENT.

APPROVED

SIGNAL ENGINEER

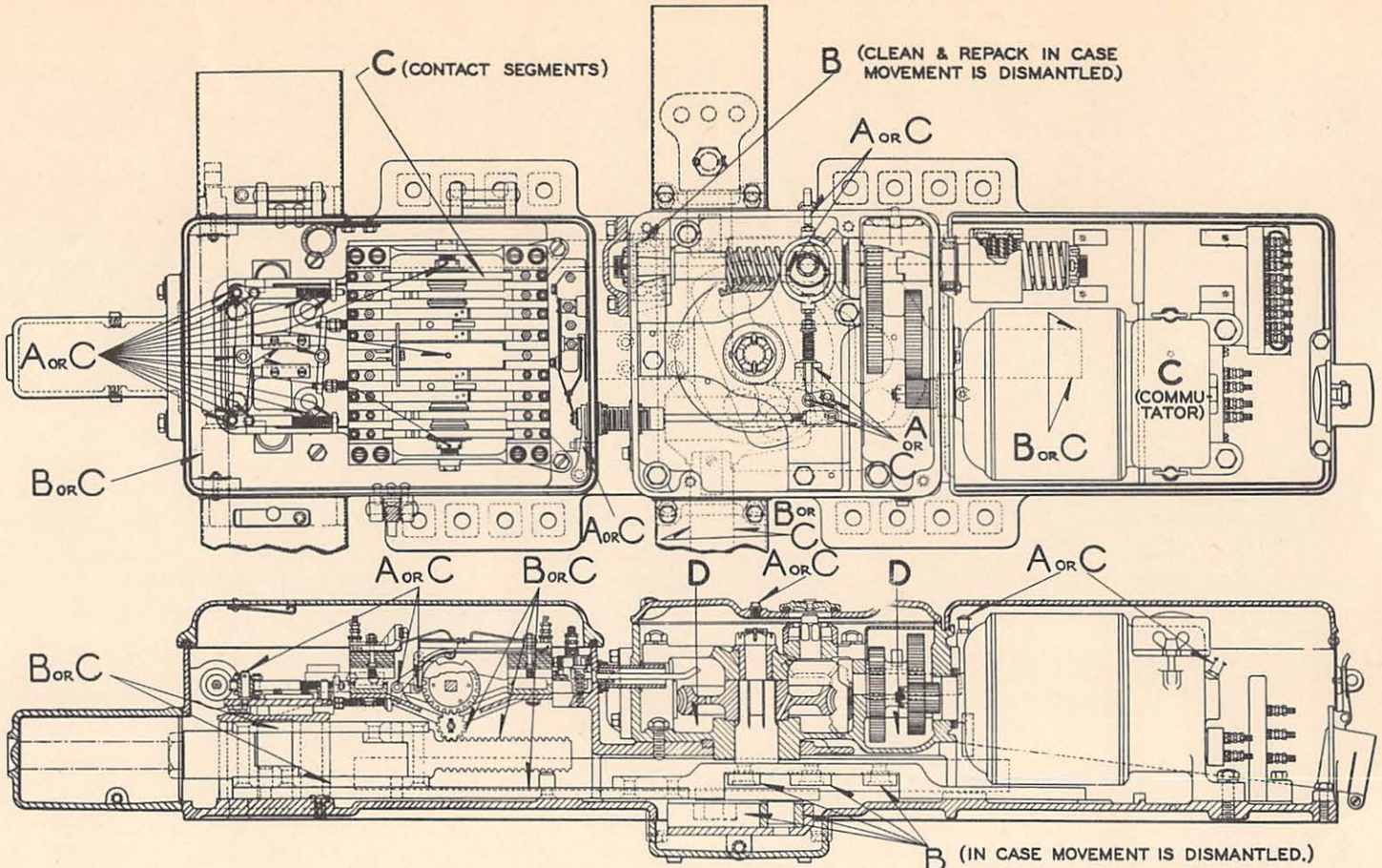
ENGINEER M. OF W.

CHIEF ENGINEER

PLAN	
DRAWN BY MF	
CHECKED A.R.B	
CORRECT J.J.R	
ISSUE	DATE
B	2-3-36

A-6-5-35
PRELIMINARY

P-76



KINDS OF LUBRICANTS

A LIGHT MACHINE OIL.
USE WHERE INDICATED UNTIL THE TEMPERATURE DROPS TO A POINT WHERE THE OIL WILL NOT FLOW FREELY FROM THE OIL CAN, AT WHICH TIME START THE USE OF LUBRICANT "C".

B ALEMITE GREASE (RAILWAY SIGNAL GRADE)
USE WHERE INDICATED FOR TEMPERATURES DOWN TO 0°F. WITH TEMPERATURES BELOW THAT POINT USE LUBRICANT "C".

C A.R.A. SPECIFICATION OIL 10320.
USE WHERE INDICATED.

D TEXACO STARZON "C"
USE WHERE INDICATED.

1. WHEN LUBRICATING CONTACTING SURFACES OF SLIDING CONTACTS BE CAREFUL TO REMOVE ANY SURPLUS OIL.

2. WHERE LUBRICANT "C" IS SPECIFIED DURING LOW TEMPERATURES, ITS USE SHOULD BE STARTED SUFFICIENTLY IN ADVANCE OF COLD WEATHER TO WASH OUT OR DILUTE THE HEAVIER LUBRICANT.

3. THE FREQUENCY WITH WHICH SWITCH MACHINES SHOULD BE LUBRICATED DEPENDS A GOOD DEAL ON THE SERVICE REQUIRED OF THEM. FOR FREQUENT OPERATION IT MAY BE NESSARY TO LUBRICATE THE SWITCH MACHINES ONCE A WEEK AND FOR INFREQUENT OPERATION ONCE A MONTH MAY BE SUFFICIENT.

4. USE EXTREME CARE WHEN FORCING LUBRICANT INTO BEARINGS WHICH CANNOT BE OBSERVED TO AVOID GETTING GREASE OR OIL INTO PARTS WHERE IT MIGHT CAUSE DAMAGE.

5. DURING WINTER THE LUBRICANT USED IN THE SPUR AND WORM GEAR COMPARTMENTS SHOULD BE TEXACO STARZON "BB" INSTEAD OF TEXACO STARZON "C"

6. EXTREME CARE MUST BE TAKEN TO DRAIN OUT THE THIN LUBRICANT, USED DURING THE WINTER, FROM THE SPUR AND WORM GEAR COMPARTMENTS BEFORE PUTTING IN THE REGULAR LUBRICANT FOR SUMMER USE.

7. APPLY A VERY LIGHT FILM OF OIL ON ALL CONTACT SEGMENTS AT FREQUENT INTERVALS AFTER THOROUGHLY CLEANING.

8. WIPE COMMUTATOR WITH CLOTH CONTAINING A SLIGHT AMOUNT OF OIL IF BRUSHES SQUEAL OR CHATTER.

9. READ CAREFULLY THE INSTRUCTIONS GOVERNING THE LUBRICATION OF SWITCH MACHINES IN THE U.S.&S. CO. INSTRUCTION PAMPHLET U-5026.

BOSTON AND MAINE R.R.

LUBRICATION CHART FOR STYLE M-2 ELECTRIC SWITCH AND LOCK MOVEMENT.

APPROVED

SIGNAL ENGINEER

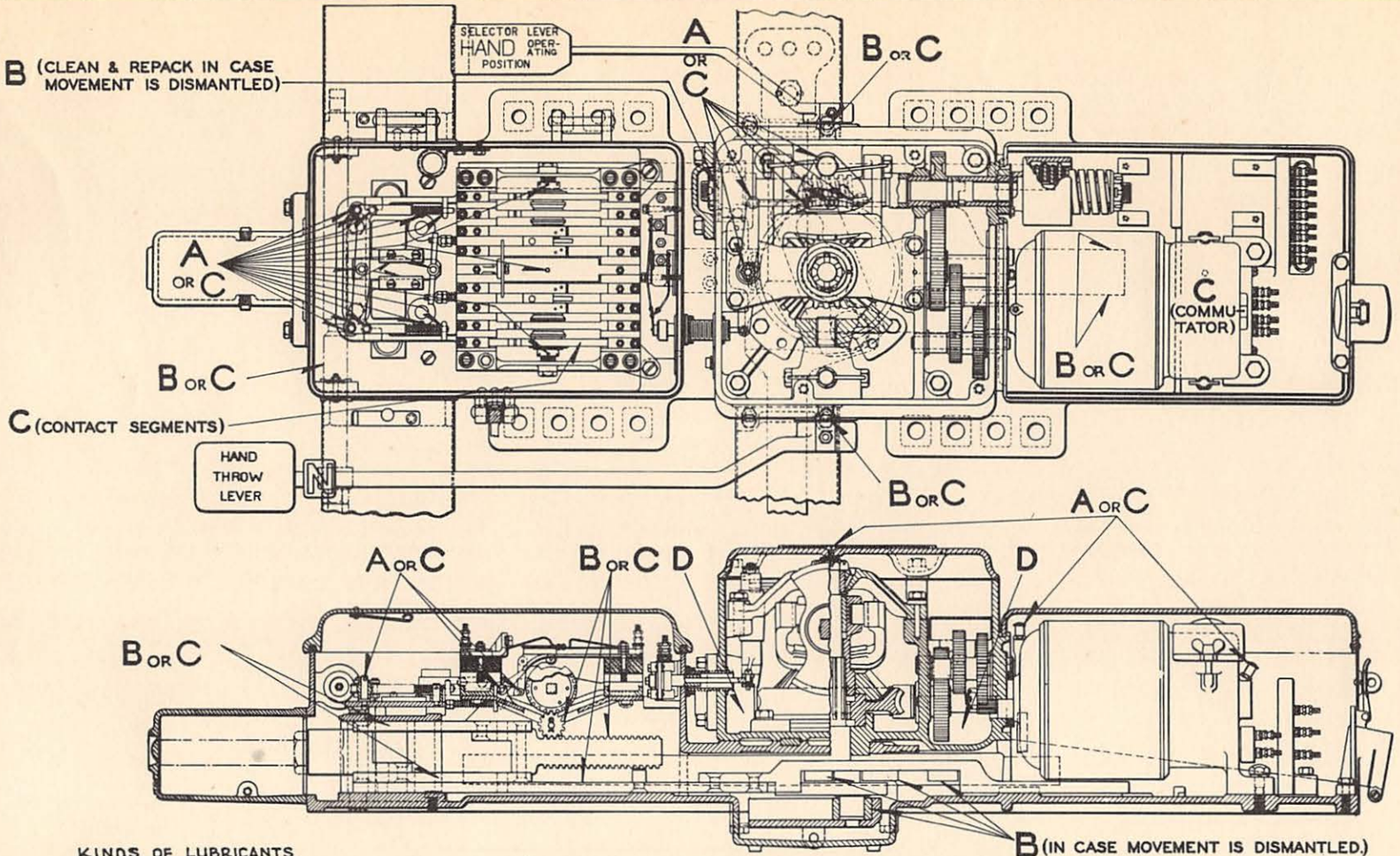
ENGINEER M. OF W.

CHIEF ENGINEER

PLAN	
DRAWN BY MF	
CHECKED A.R.B	
CORRECT J.J.R	
ISSUE	DATE
B	2-3-36

A 6-5-35
PRELIMINARY

P-77



KINDS OF LUBRICANTS

A – LIGHT MACHINE OIL.
USE WHERE INDICATED UNTIL THE TEMPERATURE DROPS TO A POINT WHERE THE OIL WILL NOT FLOW FREELY FROM THE OIL CAN, AT WHICH TIME START THE USE OF LUBRICANT "C".

B – ALEMITE GREASE (RAILWAY SIGNAL GRADE)
USE WHERE INDICATED FOR TEMPERATURES DOWN TO 0°F. WITH TEMPERATURES BELOW THAT POINT USE LUBRICANT "C".

C – A.R.A. SPECIFICATION OIL 10320.
USE WHERE INDICATED.

D – TEXACO STARZON "C"
USE WHERE INDICATED.

1. WHEN LUBRICATING CONTACTING SURFACES OF SLIDING CONTACTS BE CAREFUL TO REMOVE ANY SURPLUS OIL.
2. WHERE LUBRICANT "C" IS SPECIFIED DURING LOW TEMPERATURES, ITS USE SHOULD BE STARTED SUFFICIENTLY IN ADVANCE OF COLD WEATHER TO WASH OUT OR DILUTE THE HEAVIER LUBRICANT.
3. THE FREQUENCY WITH WHICH SWITCH MACHINES SHOULD BE LUBRICATED DEPENDS A GOOD DEAL ON THE SERVICE REQUIRED OF THEM. FOR FREQUENT OPERATION IT MAY BE NECESSARY TO LUBRICATE THE SWITCH MACHINE ONCE A WEEK, AND FOR INFREQUENT OPERATION ONCE A MONTH MAY BE SUFFICIENT.
4. USE EXTREME CARE WHEN FORCING LUBRICANT INTO BEARINGS WHICH CANNOT BE OBSERVED TO AVOID GETTING GREASE OR OIL INTO PARTS WHERE IT MIGHT CAUSE DAMAGE.
5. DURING WINTER THE LUBRICANT USED IN THE SPUR AND WORM GEAR COMPARTMENTS SHOULD BE TEXACO STARZON "BB" INSTEAD OF TEXACO STARZON "C".
6. EXTREME CARE MUST BE TAKEN TO DRAIN OUT THE THIN LUBRICANT, USED DURING THE WINTER, FROM THE SPUR AND WORM GEAR COMPARTMENTS BEFORE PUTTING IN THE REGULAR LUBRICANT FOR SUMMER USE.
7. APPLY A VERY LIGHT FILM OF OIL ON ALL CONTACT SEGMENTS AT FREQUENT INTERVALS AFTER THOROUGHLY CLEANING.
8. WIPE COMMUTATOR WITH CLOTH CONTAINING A SLIGHT AMOUNT OF OIL IF BRUSHES SQUEAL OR CHATTER.
9. READ CAREFULLY THE INSTRUCTIONS GOVERNING THE LUBRICATION OF SWITCH MACHINES IN THE U.S. & S. CO.'S INSTRUCTION PAMPHLET U-5027.

BOSTON AND MAINE R.R.

LUBRICATION CHART FOR STYLE M-20 ELECTRIC SWITCH AND LOCK MOVEMENT.

APPROVED

SIGNAL ENGINEER

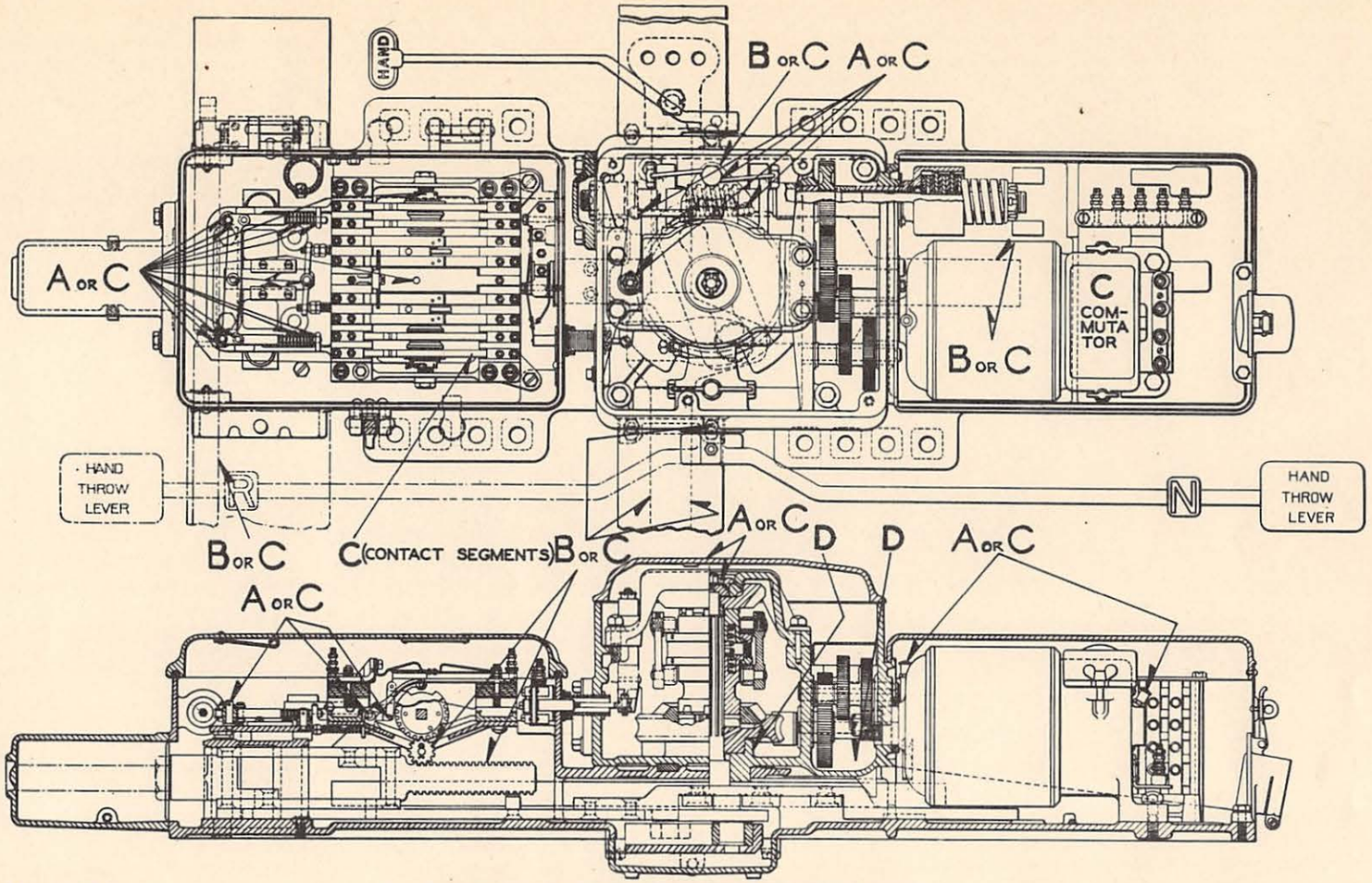
ENGINEER M. OF W.

CHIEF ENGINEER

PLAN	
DRAWN BY MF	
CHECKED A.R.B	
CORRECT J.J.R.	
ISSUE	DATE
B	2-3-36

A 6-5-35
PRELIMINARY

P-78



KINDS OF LUBRICANTS

A – LIGHT MACHINE OIL
USE WHERE INDICATED UNTIL THE TEMPERATURE DROPS TO A POINT WHERE THE OIL WILL NOT FLOW FREELY FROM THE OIL CAN, AT WHICH TIME START THE USE OF LUBRICANT "C".

B – ALEMITE GREASE (RAILWAY SIGNAL GRADE).
USE WHERE INDICATED FOR TEMPERATURES DOWN TO 0°F. WITH TEMPERATURES BELOW THAT POINT USE LUBRICANT "C".

C – A.R.A. SPECIFICATION OIL 10320.
USE WHERE INDICATED.

D – TEXACO STARZON "C"
USE WHERE INDICATED.

1. WHEN LUBRICATING CONTACTING SURFACES OF SLIDING CONTACTS BE CAREFUL TO REMOVE ANY SURPLUS OIL.
2. WHERE LUBRICANT "C" IS SPECIFIED DURING LOW TEMPERATURES ITS USE SHOULD BE STARTED SUFFICIENTLY IN ADVANCE OF COLD WEATHER TO WASH OUT OR DILUTE THE HEAVIER LUBRICANT.
3. THE FREQUENCY WITH WHICH SWITCH MACHINES SHOULD BE LUBRICATED DEPENDS A GOOD DEAL ON THE SERVICE REQUIRED OF THEM. FOR FREQUENT OPERATION IT MAY BE NECESSARY TO LUBRICATE THE MACHINE ONCE A WEEK, AND FOR INFREQUENT OPERATION ONCE A MONTH MAY BE SUFFICIENT.
4. USE EXTREME CARE WHEN FORCING LUBRICANT INTO BEARINGS WHICH CANNOT BE OBSERVED TO AVOID GETTING GREASE OR OIL INTO PARTS WHERE IT MIGHT CAUSE DAMAGE.
5. DURING WINTER THE LUBRICANT USED IN THE SPUR AND WORM GEAR COMPARTMENTS SHOULD BE TEXACO STARZON "BB" INSTEAD OF TEXACO STARZON "C"
6. CARE MUST BE TAKEN TO DRAIN OUT THE THIN LUBRICANT, USED DURING THE WINTER, FROM THE SPUR AND WORM GEAR COMPARTMENTS BEFORE PUTTING IN THE REGULAR LUBRICANT FOR SUMMER USE.
7. APPLY A VERY LIGHT FILM OF OIL ON ALL CONTACT SEGMENTS AT FREQUENT INTERVALS AFTER THOROUGHLY CLEANING.
8. WIPE COMMUTATOR WITH CLOTH CONTAINING A SLIGHT AMOUNT OF OIL IF BRUSHES SQUEAK OR CHATTER.
9. READ CAREFULLY THE INSTRUCTIONS GOVERNING THE LUBRICATION OF SWITCH MACHINES IN U.S.&S.CO. INSTRUCTION PAMPHLET U-5035.

BOSTON AND MAINE R.R.

LUBRICATION CHART FOR STYLE M-22 ELECTRIC SWITCH AND LOCK MOVEMENT.

APPROVED

SIGNAL ENGINEER

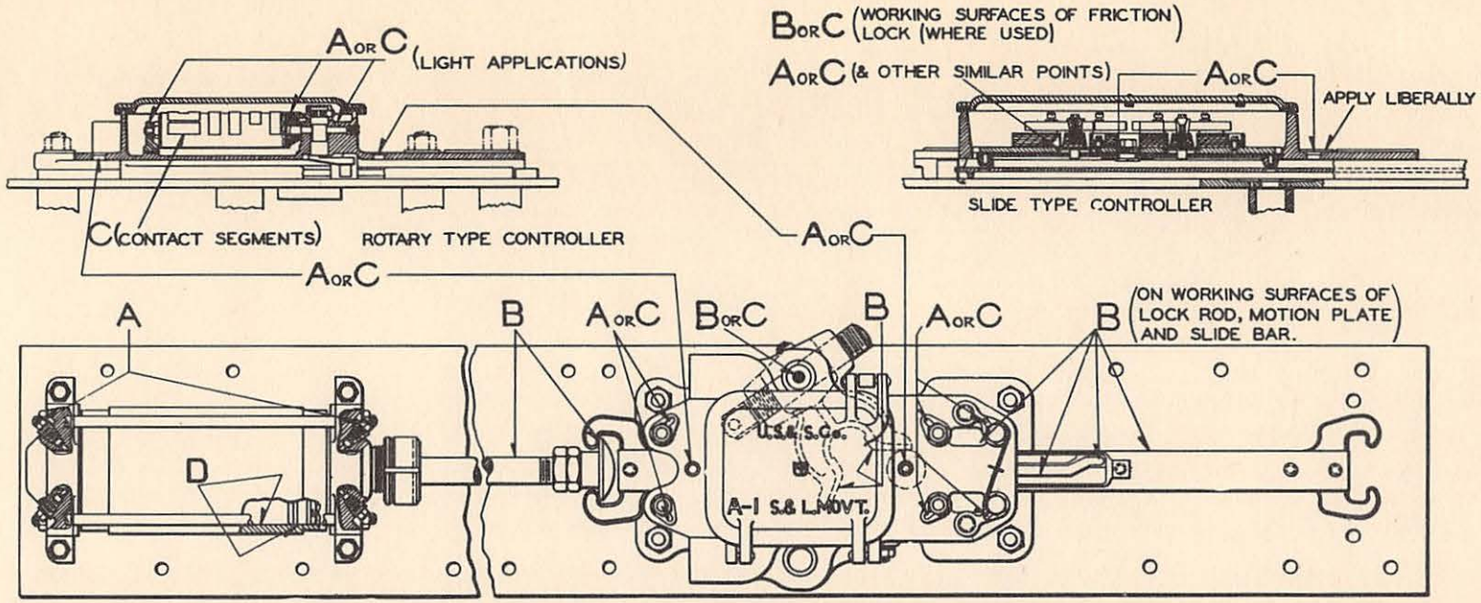
ENGINEER M. OF W.

CHIEF ENGINEER

PLAN	
DRAWN BY MF	
CHECKED A.R.B	
CORRECT J.J.R.	
ISSUE	DATE
B	2-3-36

A 6-5-35
PRELIMINARY

P-79



KINDS OF LUBRICANTS.

A-LIGHT MACHINE OIL.
USE WHERE INDICATED UNTIL THE TEMPERATURE DROPS TO A POINT WHERE THIS OIL WILL NOT FLOW FREELY FROM AN OIL CAN, AT WHICH TIME START THE USE OF LUBRICANT "C".

B-ALEMITE GREASE (RAILWAY SIGNAL GRADE)
USE WHERE INDICATED FOR TEMPERATURES DOWN TO 0°F. WITH TEMPERATURES BELOW THIS POINT USE LUBRICANT "C"

C-A.R.A. SPECIFICATION OIL 10320
USE WHERE INDICATED.

D-CHESEBROUGH VASELINE (STANDARD OIL CO.-LIGHT GRADE)
USE WHERE INDICATED.

1. WHEN LUBRICATING CONTACTING SURFACES OF SLIDING CONTACTS BE CAREFUL TO REMOVE ANY SURPLUS OIL.
2. WHERE LUBRICANT "C" IS SPECIFIED DURING LOW TEMPERATURES ITS USE SHOULD BE STARTED SUFFICIENTLY IN ADVANCE OF COLD WEATHER TO WASH OUT OR DILUTE THE HEAVIER LUBRICANT.
3. THE FREQUENCY WITH WHICH SWITCH MACHINES SHOULD BE LUBRICATED DEPENDS A GOOD DEAL ON THE SERVICE REQUIRED OF THEM. FOR FREQUENT OPERATION IT MAY BE NECESSARY TO LUBRICATE THE SWITCH MACHINES ONCE A WEEK, AND FOR INFREQUENT OPERATION ONCE A MONTH MAY BE SUFFICIENT.
4. USE EXTREME CARE WHEN FORCING LUBRICANT INTO BEARINGS WHICH CANNOT BE OBSERVED TO AVOID GETTING GREASE OR OIL INTO PARTS WHERE IT MIGHT CAUSE DAMAGE.
5. APPLY LUBRICANT WITH A BRUSH TO THE WORKING SURFACE OF THE MOTION PLATE, SLIDE BAR, ROLLERS, LOCKROD, PIN CONNECTIONS, AND ANY EXPOSED FINISHED SURFACE.
6. READ CAREFULLY THE INSTRUCTIONS GOVERNING THE LUBRICATION OF SWITCH MACHINES IN U.S. & S.CO. INSTRUCTION PAMPHLETS U-5014 AND U-5031.

E. P. SWITCH VALVES

USE CHESEBROUGH VASELINE (STANDARD OIL CO. LIGHT GRADE) FOR WABCO PISTON PACKING AND ALL OTHER MOVING PARTS OF THE VALVE EXCEPT THE PIN VALVES.

THE PIN VALVES SHOULD NOT BE LUBRICATED.

USE W.A. WOOD CO.'S VALVE OILS "1" AND "2" FOR LEATHER PISTON PACKING.

USE ALEMITE GREASE, RAILWAY SIGNAL GRADE WHERE ALEMITE-ZERK FITTINGS ARE PROVIDED.

BOSTON AND MAINE R.R.

LUBRICATION CHART FOR STYLE A-1 ELECTRO-PNEU. SWITCH AND LOCK MOVEMENT.

APPROVED

SIGNAL ENGINEER

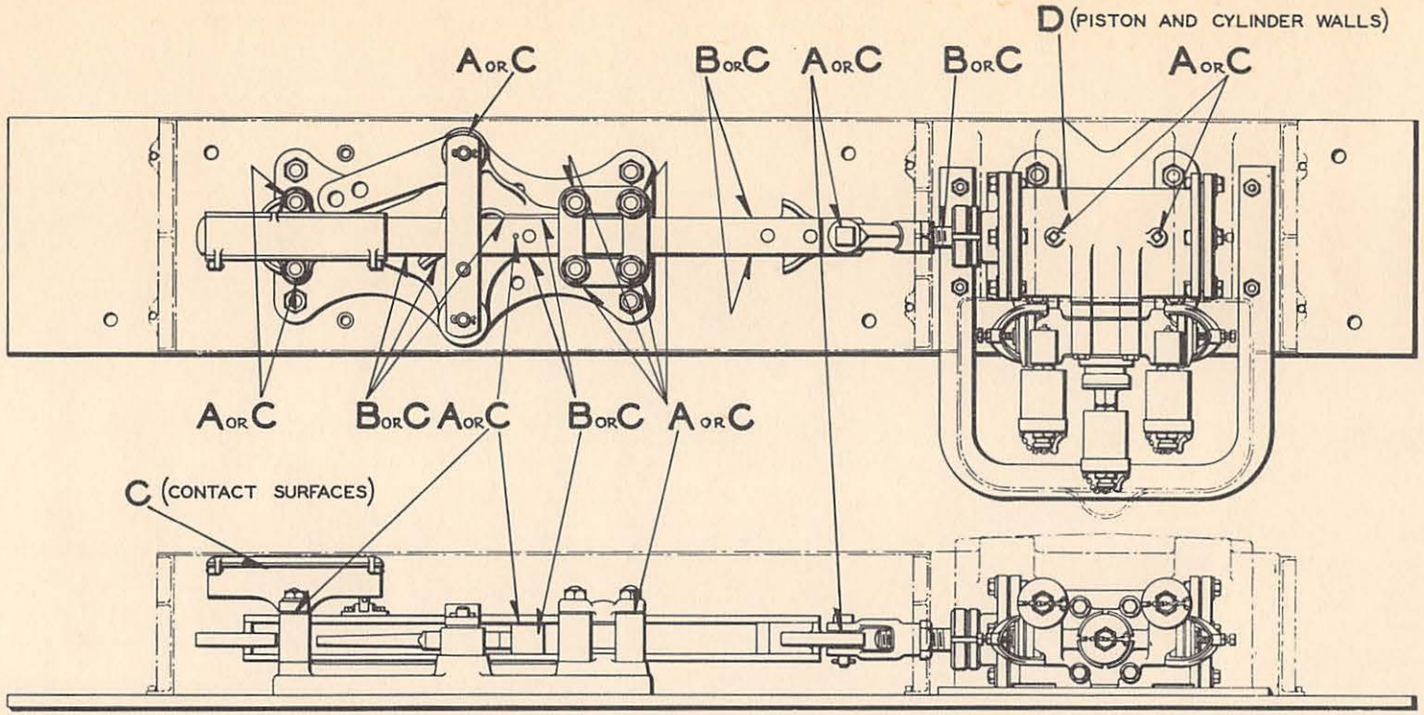
ENGINEER M. OF W

CHIEF ENGINEER

PLAN	
DRAWN BY MF	
CHECKED A.R.B.	
CORRECT J.J.R.	
ISSUE	DATE
B	2-3-36

A-6-5-35
PRELIMINARY

P-80



KINDS OF LUBRICANTS

A- LIGHT MACHINE OIL.
USE WHERE INDICATED UNTIL THE TEMPERATURE DROPS TO A POINT WHERE THIS OIL WILL NOT FLOW FREELY FROM AN OIL CAN, AT WHICH TIME START THE USE OF LUBRICANT "C".

B- ALEMITE GREASE (RAILWAY SIGNAL GRADE)
USE WHERE INDICATED FOR TEMPERATURES DOWN TO 0°F. WITH TEMPERATURES BELOW THIS POINT USE LUBRICANT "C".

C-A.R.A. SPECIFICATION OIL 10320.
USE WHERE INDICATED.

D-CHESEBROUGH VASELINE (STANDARD OIL CO.-LIGHT GRADE)
USE WHERE INDICATED.

1. WHEN LUBRICATING CONTACTING SURFACES OF SLIDING CONTACTS BE CAREFUL TO REMOVE ANY SURPLUS OIL.
2. WHERE LUBRICANT "C" IS SPECIFIED DURING LOW TEMPERATURES ITS USE SHOULD BE STARTED SUFFICIENTLY IN ADVANCE OF COLD WEATHER TO WASH OUT OR DILUTE THE HEAVIER LUBRICANT.
3. THE FREQUENCY WITH WHICH SWITCH MACHINES SHOULD BE LUBRICATED DEPENDS A GOOD DEAL ON THE SERVICE REQUIRED OF THEM. FOR FREQUENT OPERATION IT MAY BE NECESSARY TO LUBRICATE THE SWITCH MACHINES ONCE A WEEK, AND FOR INFREQUENT OPERATION ONCE A MONTH MAY BE SUFFICIENT.
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5. APPLY LUBRICANT WITH A BRUSH TO THE WORKING SURFACES OF THE MOTION PLATE, SLIDE BAR, ROLLERS, LOCK RODS, PIN CONNECTIONS AND ANY EXPOSED FINISHED SURFACE.
6. APPLY A VERY LIGHT FILM OF OIL ON ALL CONTACT SEGMENTS AT FREQUENT INTERVALS AFTER THOROUGHLY CLEANING.

E.P. SWITCH VALVES

USE CHESEBROUGH VASELINE FOR WABCO PISTON PACKING AND ALL OTHER MOVING PARTS OF THE VALVE EXCEPT THE PIN VALVES.
THE PIN VALVES SHOULD NOT BE LUBRICATED.
USE W.A.WOOD CO'S. VALVE OILS #1 AND #2 FOR LEATHER PISTON PACKING.

BOSTON AND MAINE R.R.

LUBRICATION CHART FOR MODEL 14 ELECTRO-PNEU. SWITCH AND LOCK MOVEMENT.

APPROVED

SIGNAL ENGINEER

ENGINEER M. OF W.

CHIEF ENGINEER

P508
D

NOTE:-

THIS SCHEME TO BE USED ONLY WHERE SHUNTING DIFFICULTY IS EXPERIENCED. SEPARATE STUDY MUST BE MADE FOR EACH TRACK CIRCUIT UNDER BOTH WET WEATHER AND DRY WEATHER CONDITIONS. VALUES OF RESISTANCE UNIT SETTINGS AND OF CURRENT ADJUSTMENTS ARE APPROXIMATE ONLY AND MAY HAVE TO BE VARIED.

AS A ROUGH GUIDE, IT IS SUGGESTED THAT CIRCUIT BE ADJUSTED SO THAT CURRENT THRU RELAY IS APPROXIMATELY 5% OVER RATED RELAY WORKING CURRENT WHEN BALLAST RESISTANCE IS AT MINIMUM (WET TRACK) AND TRACK BATTERY IS AT OR NEAR MINIMUM VOLTAGE. FOLLOWING THIS ADJUSTMENT, CIRCUIT SHOULD BE CHECKED CAREFULLY UNDER VARYING CONDITIONS AND FURTHER ADJUSTMENTS MADE AS NECESSARY.

CHECK MUST BE MADE UNDER MAXIMUM BALLAST RESISTANCE CONDITIONS (DRY TRACK) WITH TRACK BATTERY AT MAXIMUM VOLTAGE TO DETERMINE THAT NOT MORE THAN 0.020 AMP CURRENT WILL FLOW THRU A 4-OHM TRACK RELAY WHEN A SHUNT OF 0.10 OHM IS PLACED ACROSS RAILS AT BATTERY END OF TRACK CIRCUIT. (25 FT. OF NO. 16 A.W.G. OR 40 FT. OF NO. 14 A.W.G. COPPER WIRE = 0.10 OHM RESISTANCE.)

APPROXIMATELY 6 OHMS RESISTANCE UNIT
(USE 2 STANDARD VARIABLE TRACK RESISTORS)
4
STANDARD TRACK RESISTANCE UNIT
APPROXIMATELY 0.25 OHMS
2 SETS OF 2 BATTERIES IN SERIES MULTIPLE

BOSTON AND MAINE R.R.

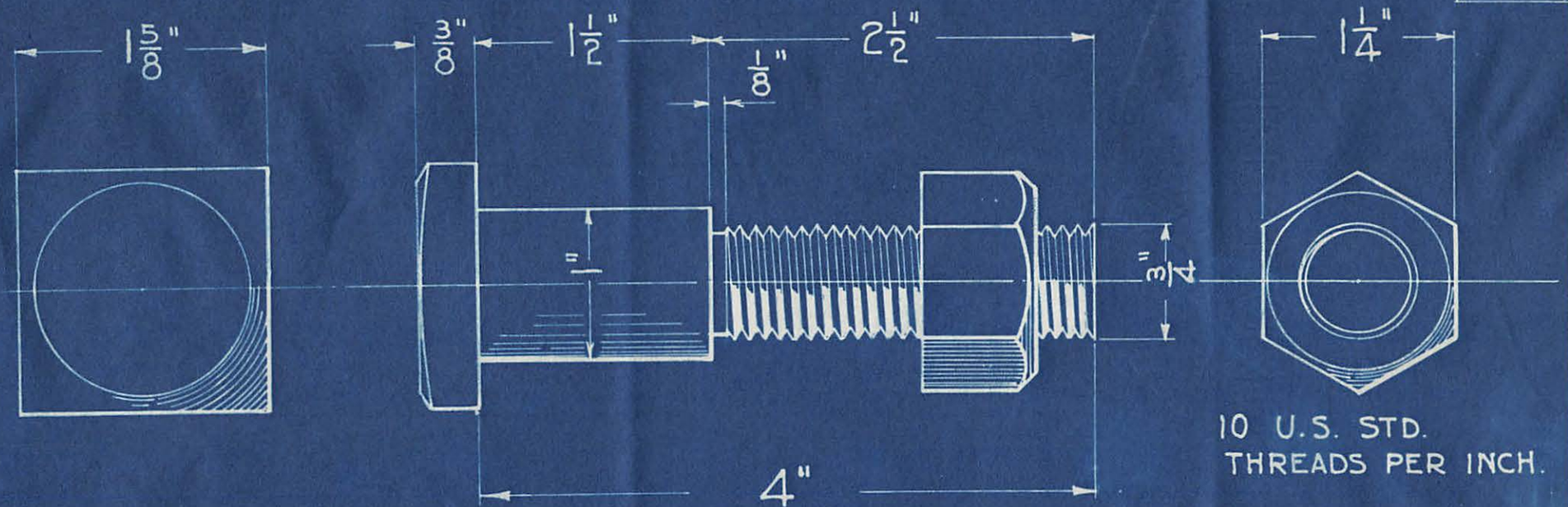
APPLICATION OF RESISTANCES AT RELAY AND AT BATTERY TO OBTAIN BETTER SHUNTING OF TRACK CIRCUIT FOR RAIL MOTOR CARS

J. P. Mueller

SIGNAL ENGINEER

8-21-36
12-5-32

P 521
D



NOTE- FOR USE ONLY ON 130# SWITCHES WHEN INTERLOCKING HOLES ARE 1" IN DIAMETER

BOSTON AND MAINE R.R.

FRONT ROD SHOULDER BOLT

1" TO 3/4" FOR USE WITH 130# RAIL

APPROVED

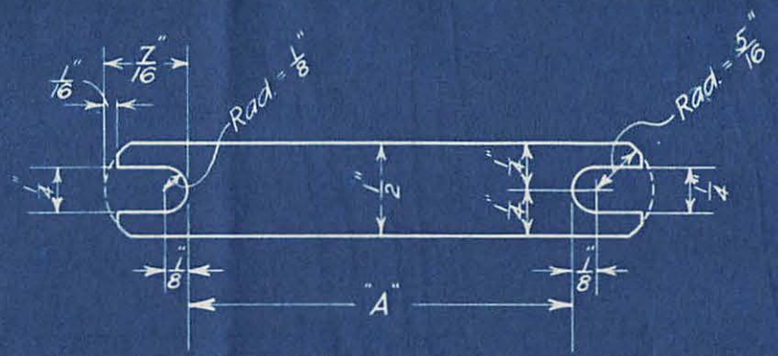
SIGNAL ENGINEER.

FULL SIZE DETAIL

5-12-33

PLAN	
Drawn: H.P.P.	
Checked:	
Correct:	
ISSUE	DATE.
A	12-1-33.

P532
D



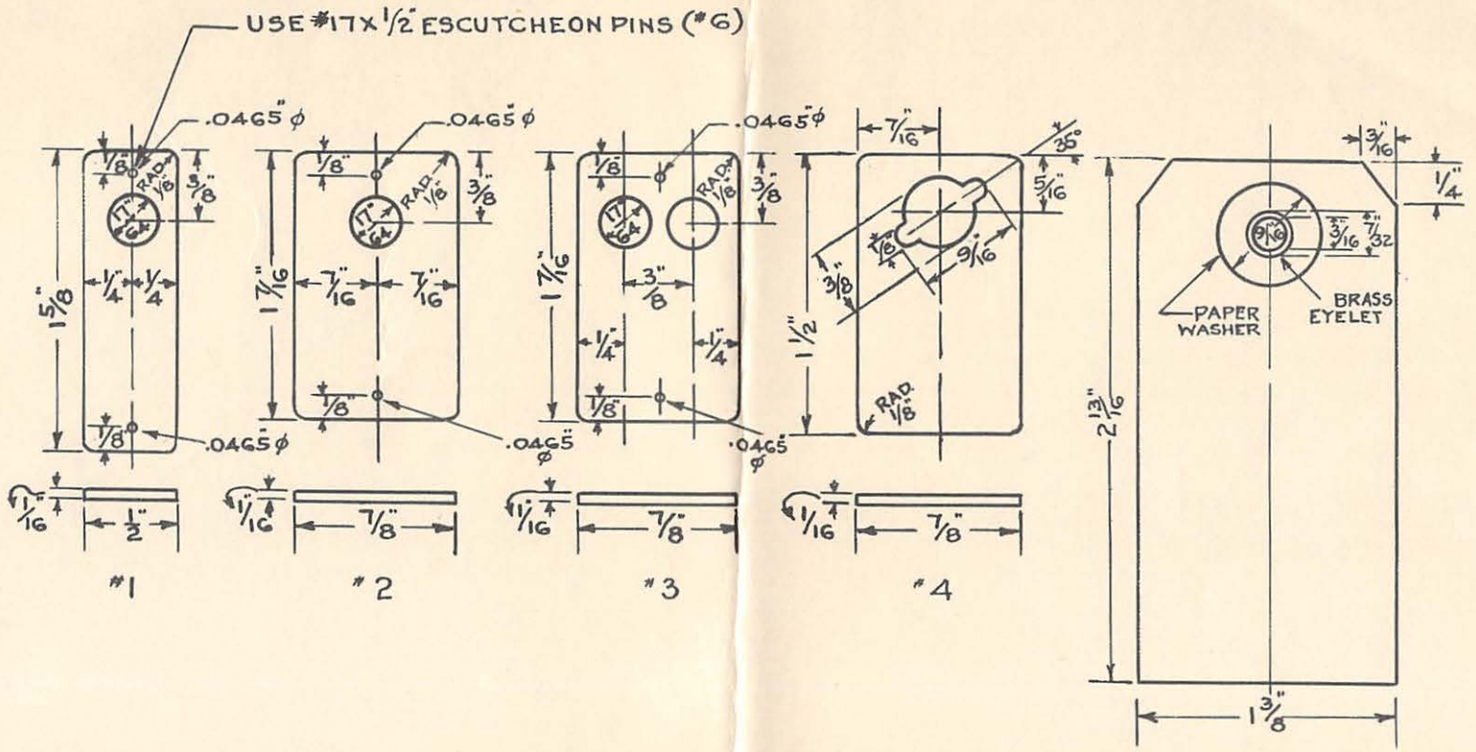
Order Ref.	Dimension "A".	Thickness.	Material.	Finish.
P532D-1	11/16"	#22 B.&S. Gauge.	Copper.	Nickel - not polished.
P532D-2	15/16"	"	"	" " "
P532D-3	1 3/16"	"	"	" " "
P532D-4	1 7/16"	"	"	" " "
P532D-5	1 11/16"	"	"	" " "
P532D-6	2 1/16"	1/32"	Brass.	" " "

BOSTON AND MAINE R.R.
TERMINAL CONNECTOR.
Scale: Full Size.

J. H. Wiggin
SIGNAL ENGINEER.

PLAN	
DRAWN: E.P.L.	
CHECKED: W.W.H.	
CORRECT: W.F.C.	
ISSUE	DATE
A	2-5-34
B	8-19-36
C	8-15-40

P536
D



ORDER REF.	MATERIAL	CORRESPONDING G.R.S.CO. TAGS APPROVED 8-31-34	CORRESPONDING U.S.& S. CO. TAGS APPROVED
P536D-1	HARD VULCANIZED BLACK FIBRE PER "A.R.A. SPECIFICATION "1323.	44983-17	#174214 - REF. 9
P536D-2	" " " " " " " "	44983-18	#31407 - REF. 3
P536D-3	" " " " " " " "	—	—
P536D-4	" " " " " " " "	44983-19	PC.#99268-REF. 6
P536D-5	DENNISON MFG. CO. "C" LINEN WITH 12" STRING ATTACHED (OR EQUAL).		
P536D-6	BRASS ESCUTCHEON PINS #17 x 1/2" (105 PER OZ.)		

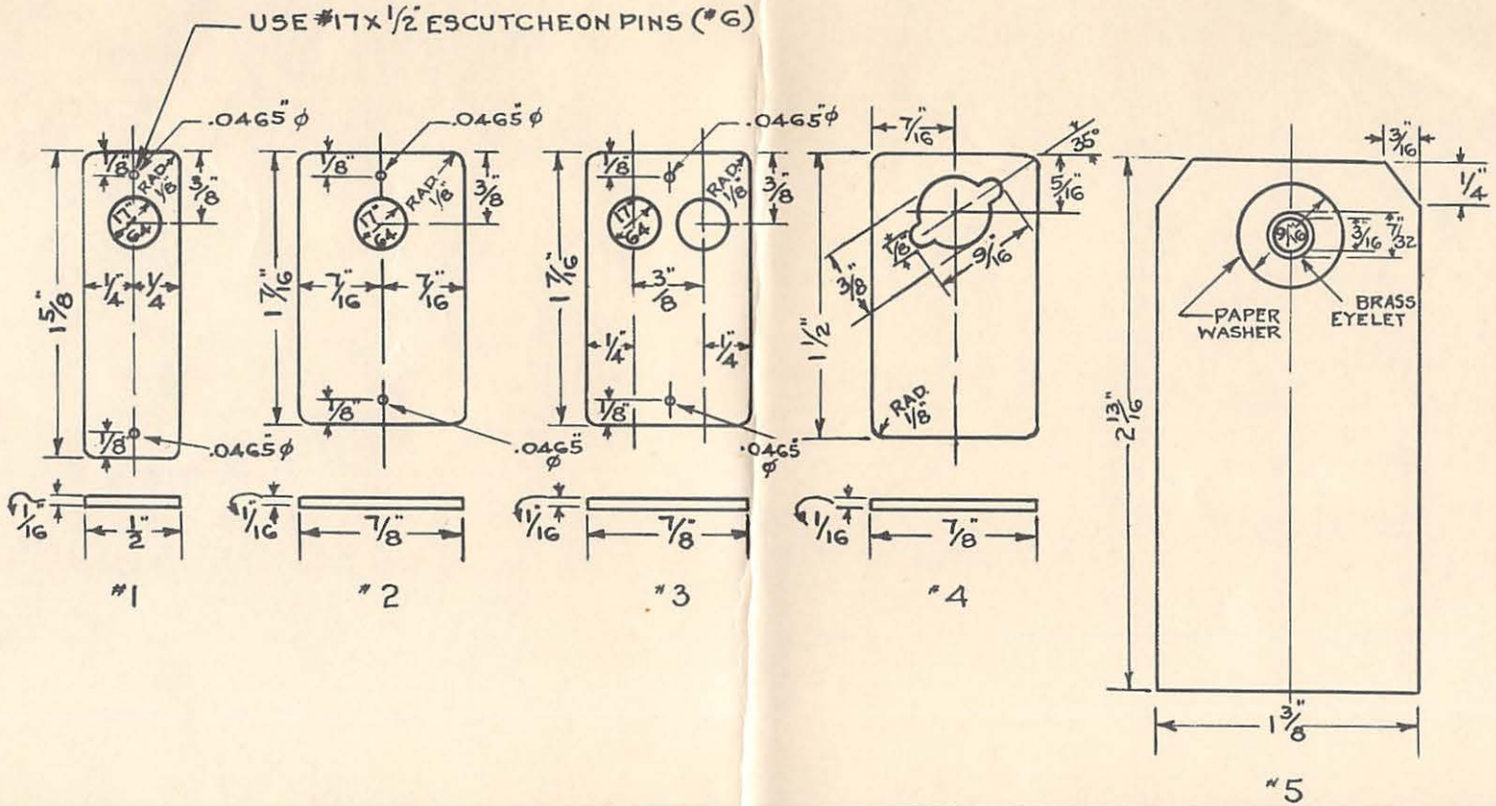
BOSTON & MAINE R.R.
TAGS
SCALE FULL SIZE

J. P. Mueller
SIGNAL ENGINEER

REC'D. JUL 8 - 49 R.R.CO. LETTER JUL 6 - 49 G.E. DEPT

PLAN	
DRAWN: E.P.L.	
CHECKED: W.W.H.	
CORRECT: W.W.H.	
ISSUE	DATE
A	2-5-34
B	8-19-36
C	8-15-40

P536
D



ORDER REF.	MATERIAL	CORRESPONDING G.R.S.CO. TAGS APPROVED 8-31-34	CORRESPONDING U.S.& S. CO. TAGS APPROVED
P536D-1	HARD VULCANIZED BLACK FIBRE PER "A.R.A. SPECIFICATION #1323.	44983-17	#174214 - REF. 9
P536D-2	" " " " " " " "	44983-18	#31407 - REF. 3
P536D-3	" " " " " " " "	—	—
P536D-4	" " " " " " " "	44983-19	PC.#99268 - REF. 6
P536D-5	DENNISON MFG. CO. "C" LINEN WITH 12" STRING ATTACHED (OR EQUAL).		
P536D-6	BRASS ESCUTCHEON PINS #17 x 1/2" (105 PER OZ.)		

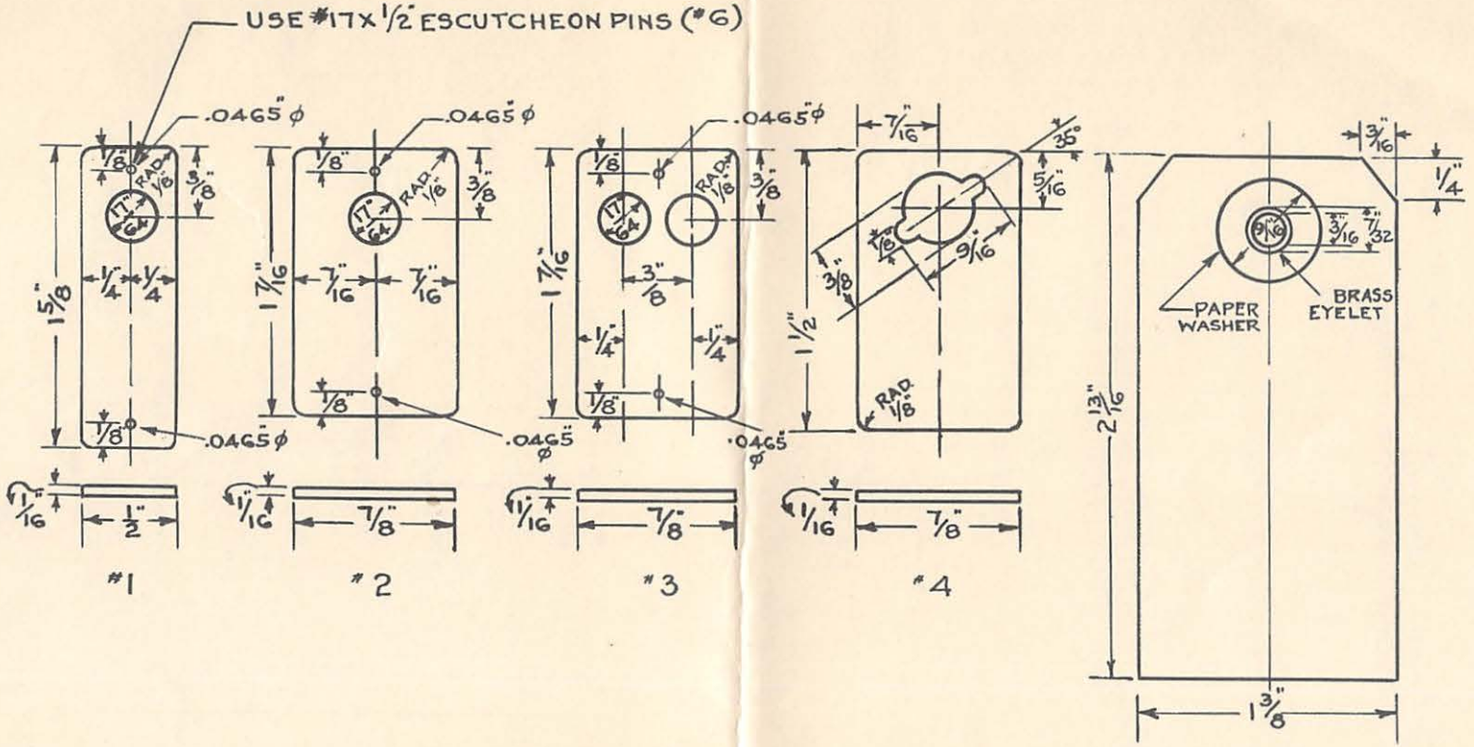
BOSTON & MAINE R.R.
TAGS
SCALE FULL SIZE

J. H. Miller
SIGNAL ENGINEER

REC'D. JUL 8 - '49 R.R.CO. LETTER JUL 6 - '49 B. E. DEPT

PLAN	
DRAWN: E.P.L.	
CHECKED: W.W.H.	
CORRECTED: W.W.H.	
ISSUE	DATE
A	2-5-34
B	8-19-36
C	8-15-40

P536
D



ORDER REF.	MATERIAL	CORRESPONDING G.R.S.CO. TAGS APPROVED 8-31-34	CORRESPONDING U.S.& S. CO. TAGS APPROVED
P536D-1	HARD VULCANIZED BLACK FIBRE PER "A.R.A. SPECIFICATION #1323.	44983-17	#174214 - REF. 9
P536D-2	" " " " " " " "	44983-18	#31407 - REF. 3
P536D-3	" " " " " " " "	—	—
P536D-4	" " " " " " " "	44983-19	PC.#99268 - REF. 6
P536D-5	DENNISON MFG. CO. "C" LINEN WITH 12" STRING ATTACHED (OR EQUAL).		
P536D-6	BRASS ESCUTCHEON PINS #17 x 1/2" (105 PER OZ.)		

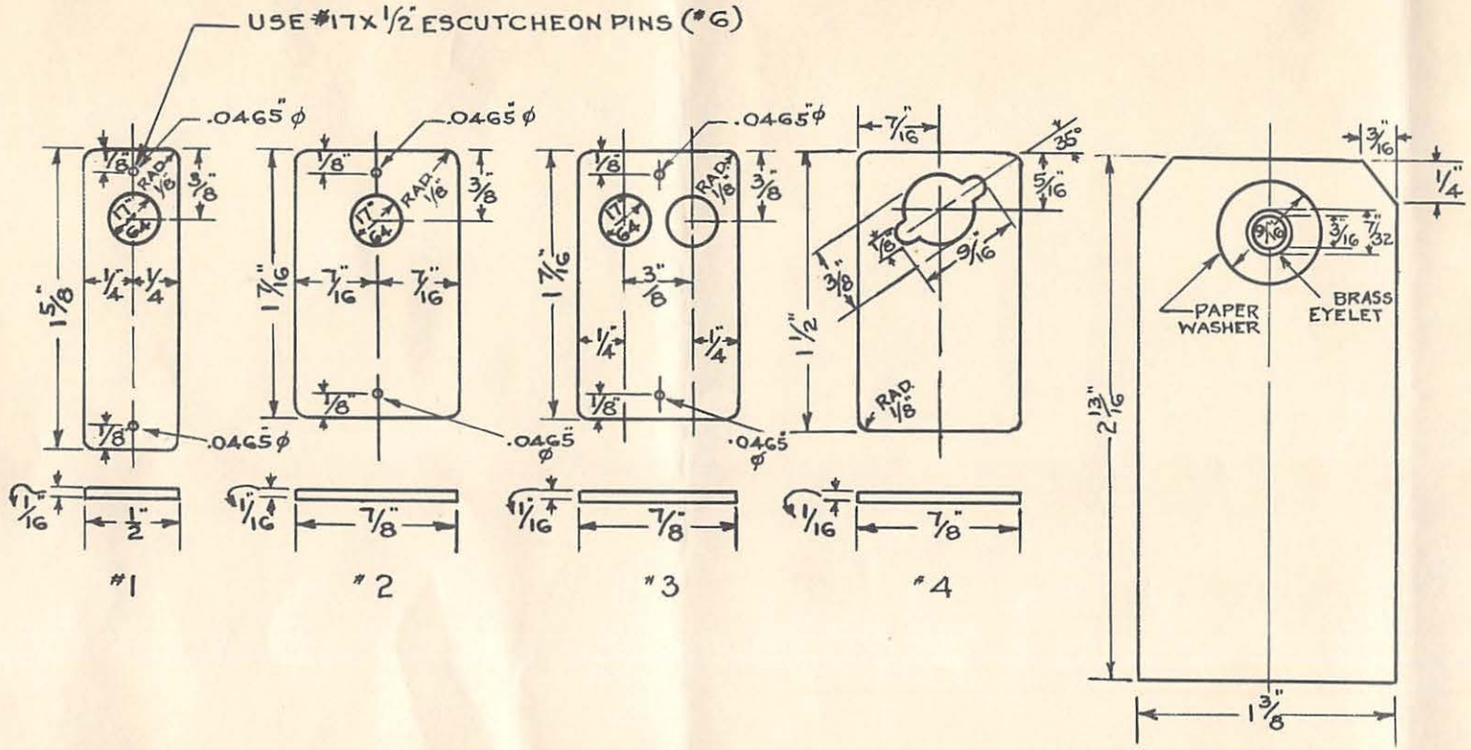
BOSTON & MAINE R.R.
TAGS
SCALE FULL SIZE

J. A. Mueller
SIGNAL ENGINEER

REC'D. JUL 8 - '49 R.R.CO. LETTER JUL 6 - '49 G. E. DEPT

PLAN	
DRAWN: E.P.L.	
CHECKED: W.W.H.	
CORRECT: W.F.	
ISSUE	DATE
A	2-5-34
B	8-19-36
C	8-15-40

P536
D



ORDER REF.	MATERIAL	CORRESPONDING G.R.S.CO. TAGS APPROVED 8-31-34	CORRESPONDING U.S.& S. CO. TAGS APPROVED
P536D-1	HARD VULCANIZED BLACK FIBRE PER "A.R.A. SPECIFICATION #1323.	44983-17	#174214 - REF. 9
P536D-2	" " " " " " " "	44983-18	#31407 - REF. 3
P536D-3	" " " " " " " "	—	—
P536D-4	" " " " " " " "	44983-19	PC.#99268 - REF. 6
P536D-5	DENNISON MFG. CO. "C" LINEN WITH 12" STRING ATTACHED (OR EQUAL).		
P536D-6	BRASS ESCUTCHEON PINS #17 x 1/2" (105 PER OZ.)		

BOSTON & MAINE R.R.
TAGS
SCALE FULL SIZE

J. P. Mueller
SIGNAL ENGINEER

PLAN	
DRAWN	H.A.
CHECKED	E.W.P.
CORRECT	5/11/34

ISSUE	DATE
A	5-11-34
B	7-9-46

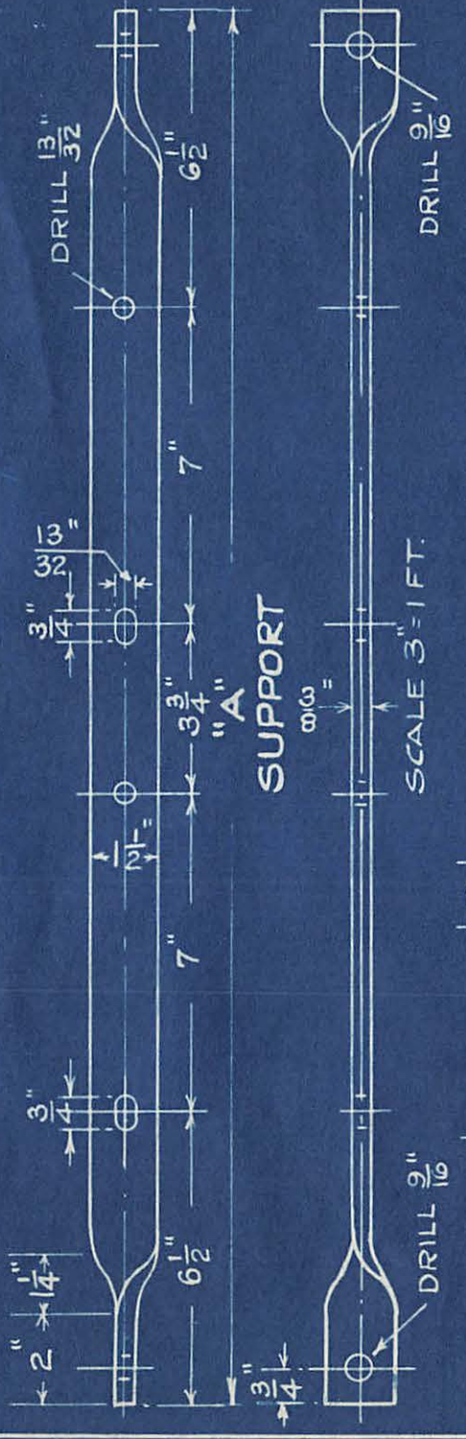
P537 D.

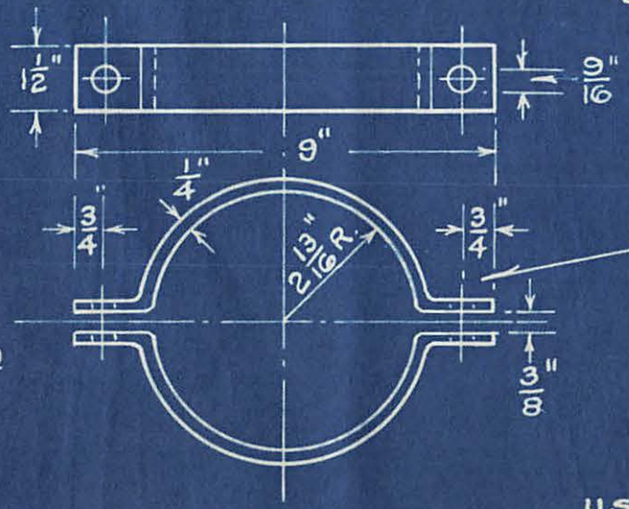
ORDER REF.	MATERIAL
P 537 D-1	LENGTH OF SUPPORT – 2 FIGURES "A" = 2'-6 3/4"
P 537 D-2	" " " 3 " "A" = 3'-5 1/2"
P 537 D-3	" " " 4 " "A" = 4'-4 1/4"
P 537 D-4	" " " 5 " "A" = 5'-3"

NOTE:- ORDER REFERENCE INCLUDES 1-SUPPORT - 2 COLLAR-CLAMPS COMPLETE WITH BOLTS + NUTS - FIGURES TO BE SPECIFIED

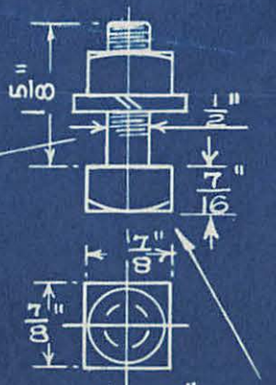
-NOTE-
PAINT ALL ALUMINUM EXCEPT FIGURES BLACK ON FACE.

FIGURE PLATES
SCALE 1 1/2" = 1FT.



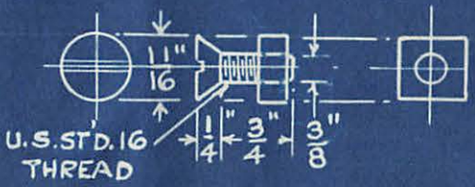


COLLAR CLAMP.
SCALE 3" = 1FT.



U.S. STD. 1/2" X 1 5/8" BOLT
13 THD. L. WASHER SQ. HD. NUT.
SCALE 6" = 1FT.

3/8" X 1" SLOTTED HEAD MACHINE SCREW. WITH SQUARE NUT.
SCALE 6" = 1FT.



BOSTON & MAINE R.R.
SIGNAL NUMBER PLATES
SCALE 1/2" - 3" - 6" = 1 FOOT.

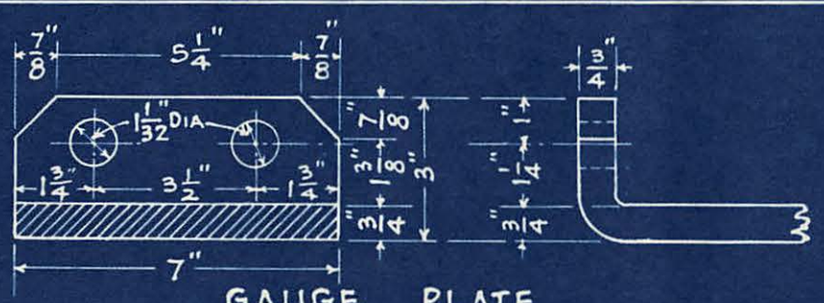
SIGNAL ENGINEER.

DRAWN	HAR
CHECKED	EMH
CORRECT	J.J.R.

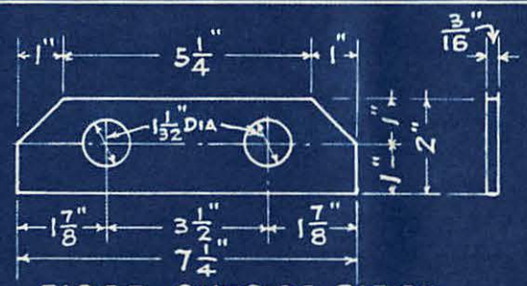
ISSUE	DATE
A	4-10-34
B	1-6-50

C-7/3 B - FIBRE BUSHING REVISED.

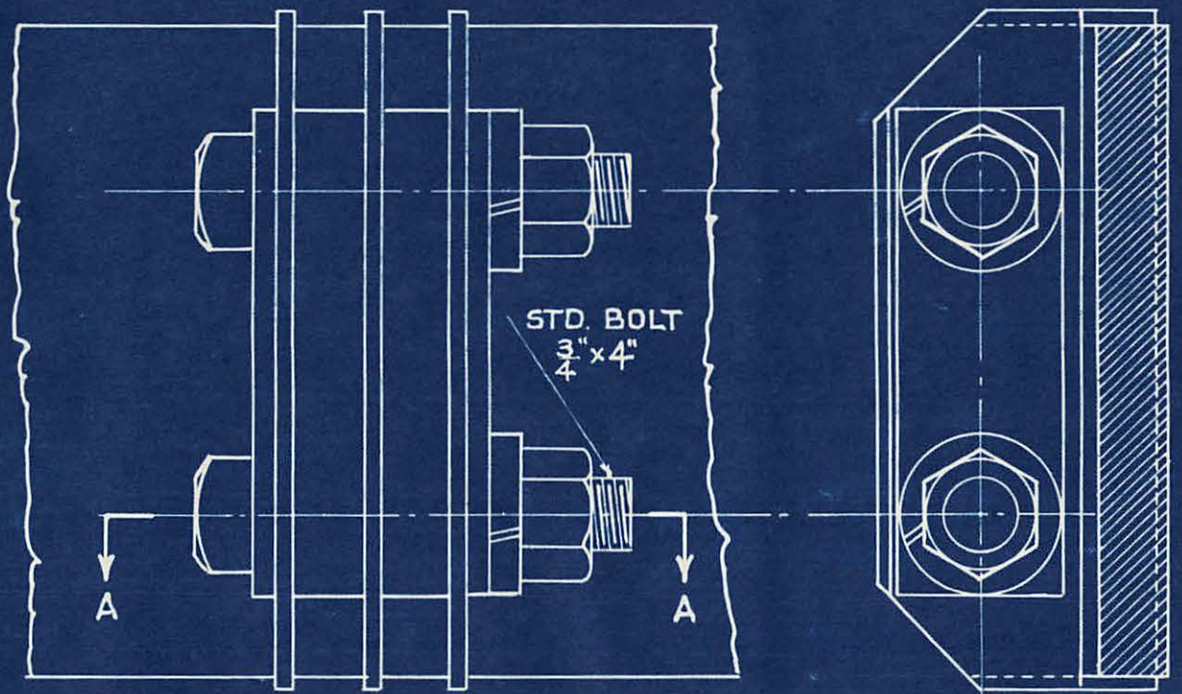
P538 D



GAUGE PLATE

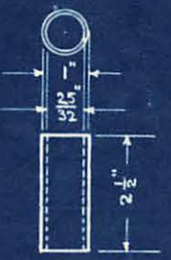


FIBRE OUTSIDE PIECE

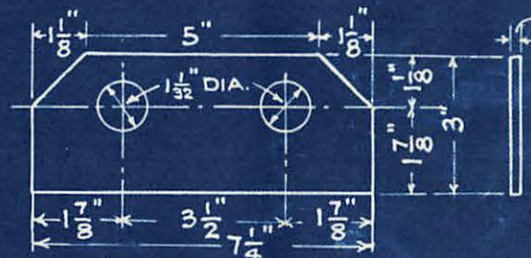


PLAN

STEEL WASHER PLATE

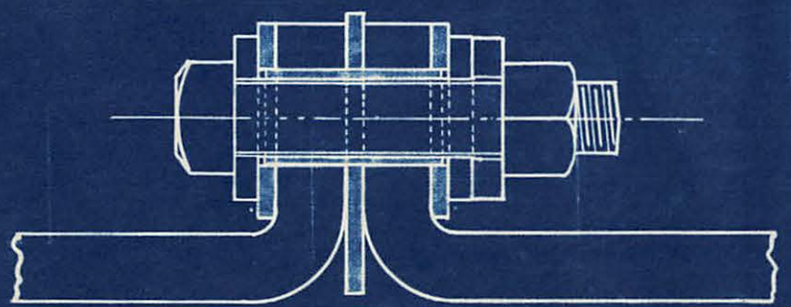


FIBRE BUSHING



FIBRE CENTER PIECE

ALSO FURNISHED 1/8" - 1/4" - 5/16" - 3/8" THICK



SECTION A-A

BOSTON AND MAINE RAILROAD

GAUGE PLATE INSULATION

E. M. Fox

ENGINEER OF SIGNALS AND TELEGRAPH

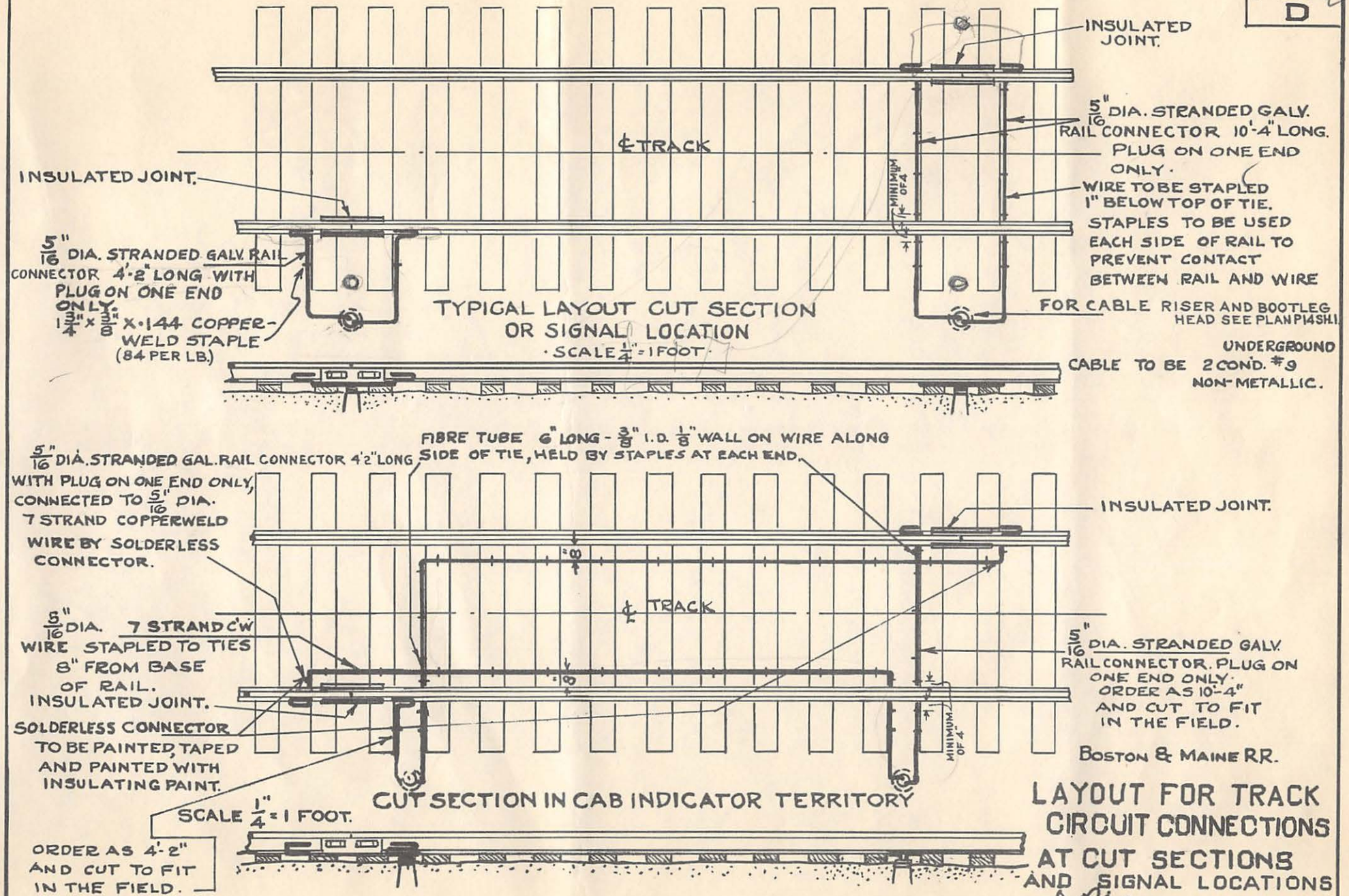
A. F. Ifield

ENGINEER M. OF W.

CHIEF ENGINEER

PLAN	
DRAWN	Wall.
CHECKED	[illegible]
CORRECTED	[illegible]
ISSUE	DATE
A	5-11-34
B	6-4-34
C	6-21-34
D	7-20-34
E	10-1-34
F	5-19-36
G	8-19-36
H	8-15-40
I	11-18-41

P 539 D


INSULATED JOINT.
5/16" DIA. STRANDED GALV. RAIL CONNECTOR 10'-4" LONG. PLUG ON ONE END ONLY.
℄ TRACK
INSULATED JOINT.
WIRE TO BE STAPLED 1" BELOW TOP OF TIE. STAPLES TO BE USED EACH SIDE OF RAIL TO PREVENT CONTACT BETWEEN RAIL AND WIRE
5/16" DIA. STRANDED GALV. RAIL CONNECTOR 4'-2" LONG WITH PLUG ON ONE END ONLY.
1 3/4" x 3/8" X .144 COPPER-WELD STAPLE (84 PER LB.)
MINIMUM OF 4"
FOR CABLE RISER AND BOOTLEG HEAD SEE PLAN P14 SH. I.
UNDERGROUND CABLE TO BE 2 COND. #9 NON-METALLIC.
TYPICAL LAYOUT CUT SECTION OR SIGNAL LOCATION
SCALE 1/4" = 1 FOOT
FIBRE TUBE 6" LONG - 3/8" I.D. 1/8" WALL ON WIRE ALONG SIDE OF TIE, HELD BY STAPLES AT EACH END.
5/16" DIA. STRANDED GAL. RAIL CONNECTOR 4'2" LONG WITH PLUG ON ONE END ONLY, CONNECTED TO 5/16" DIA. 7 STRAND COPPERWELD WIRE BY SOLDERLESS CONNECTOR.
INSULATED JOINT.
℄ TRACK
5/16" DIA. 7 STRAND C.W. WIRE STAPLED TO TIES 8" FROM BASE OF RAIL.
INSULATED JOINT.
SOLDERLESS CONNECTOR TO BE PAINTED, TAPED AND PAINTED WITH INSULATING PAINT.
5/16" DIA. STRANDED GALV. RAIL CONNECTOR. PLUG ON ONE END ONLY. ORDER AS 10'-4" AND CUT TO FIT IN THE FIELD.
MINIMUM OF 4"
CUT SECTION IN CAB INDICATOR TERRITORY
SCALE 1/4" = 1 FOOT.
ORDER AS 4'-2" AND CUT TO FIT IN THE FIELD. PLUG ON ONE END ONLY.

BOSTON & MAINE R.R.

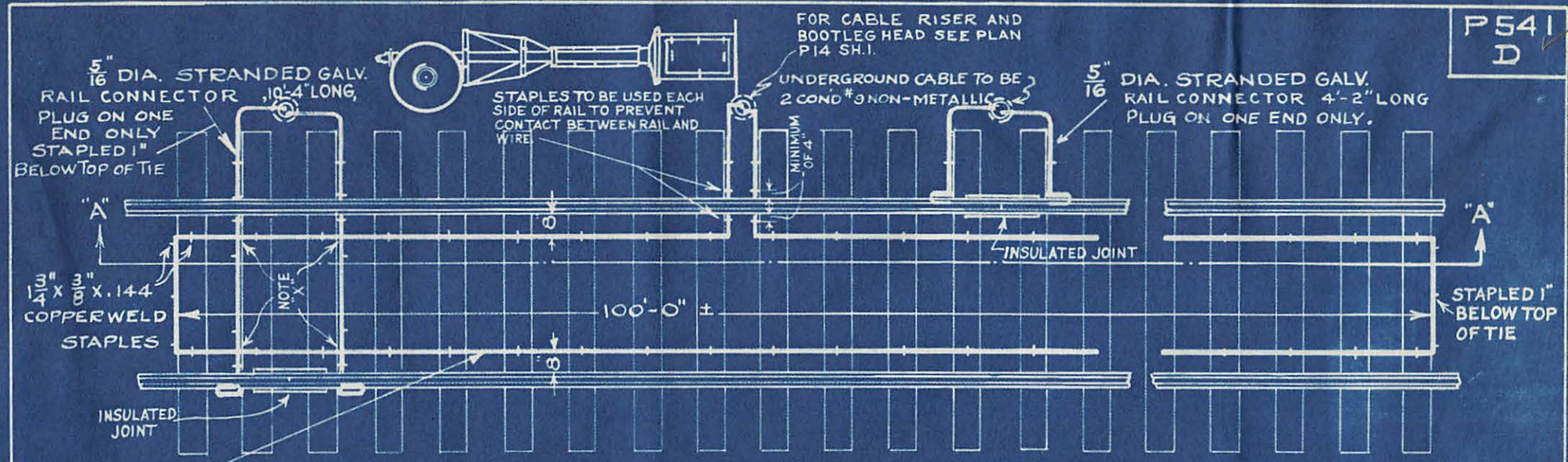
LAYOUT FOR TRACK CIRCUIT CONNECTIONS AT CUT SECTIONS AND SIGNAL LOCATIONS

SIGNAL ENGINEER.

PLAN	
DRAWN	Glg.
CHECKED	J.S.F.
CORRECT	C.M.F.

ISSUE	DATE
A	5-11-34
B	6-4-34
C	6-21-34
D	7-20-34
E	5-19-36
F	8-19-36
G	8-15-40
H	11-18-41

P541
D


5/16 DIA. STRANDED GALV. RAIL CONNECTOR 10'-4" LONG, PLUG ON ONE END ONLY STAPLED 1" BELOW TOP OF TIE
FOR CABLE RISER AND BOOTLEG HEAD SEE PLAN P14 SH.1.
STAPLES TO BE USED EACH SIDE OF RAIL TO PREVENT CONTACT BETWEEN RAIL AND WIRE
UNDERGROUND CABLE TO BE 2 COND #3 NON-METALLIC
5/16 DIA. STRANDED GALV. RAIL CONNECTOR 4'-2" LONG PLUG ON ONE END ONLY.
MINIMUM OF 4"
"A"
8
INSULATED JOINT
1 3/4" X 3/8" X .144 COPPERWELD STAPLES
NOTE "X"
100'-0" ±
STAPLED 1" BELOW TOP OF TIE
INSULATED JOINT

TYPICAL LAYOUT AT SIGNAL SHOWING SETTING POINT AND RESET LOOP FOR ONE OR TWO DIRECTION OPERATION

SECTION AT AA.

SCALE 1/4" - 1FT.

5/16" DIA. 7 STRAND COPPERWELD WIRE STAPLED TO TIES 8" FROM THE BASE OF RAILS, 213'± LONG

NOTE "X" - FIBRE TUBE 6" LONG 3/8" I.D. - 1/8" WALL ON WIRE ALONG SIDE OF TIE, HELD BY STAPLES AT EACH END.

NOTE - RESET LOOP MUST EXTEND BEYOND INSULATED JOINT IN EACH DIRECTION.
SEE STD. PLAN P47 FOR LOCATION OF SIGNAL AND INSULATED JOINTS.

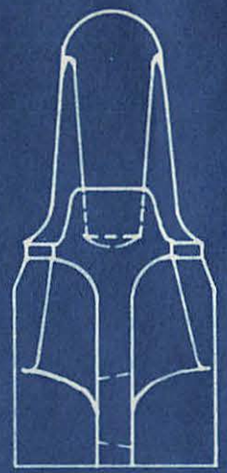
BOSTON & MAINE R.R.

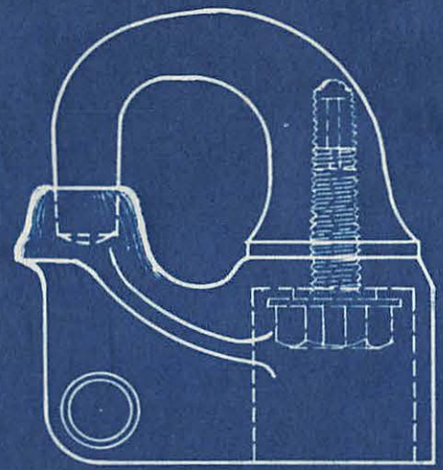
LAYOUT FOR CAB INDICATOR RESET LOOP

J. F. [illegible]
SIGNAL ENGINEER.

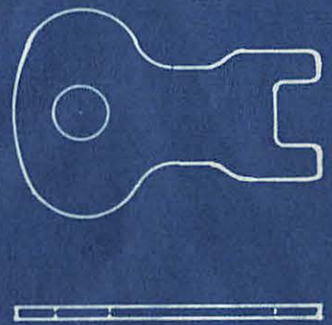
DRAWN	
CHECKED	
CORRECT.	
ISSUE	DATE
A	11-14-34

P 554
D

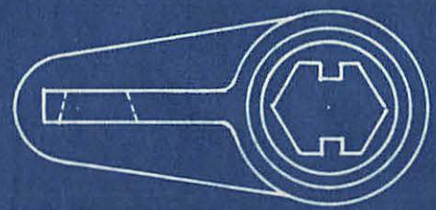




SIDE



KEY



BOTTOM VIEW

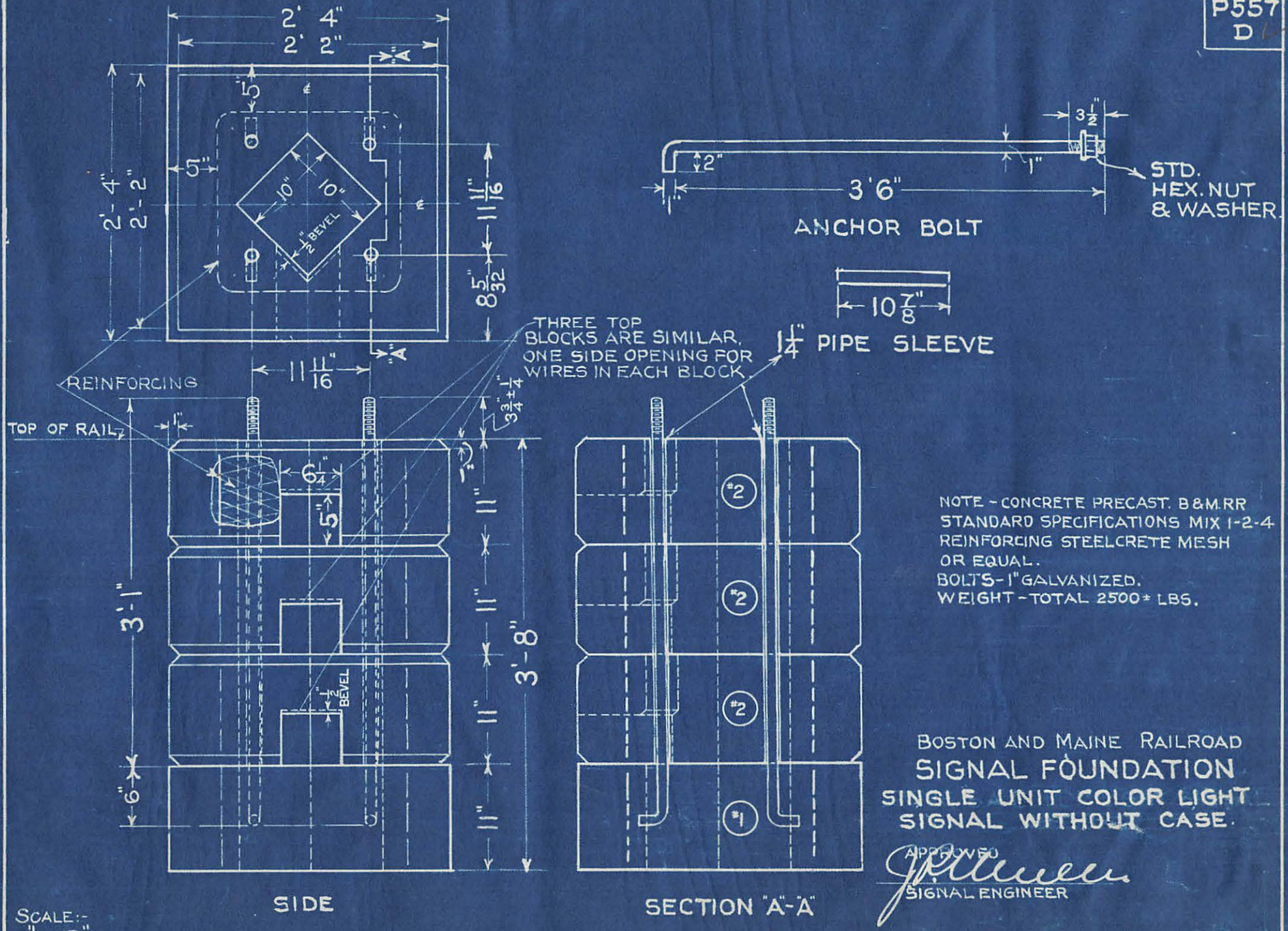
DESIGN SHOWN IS THE
"RACO" SCREW LOCK.

BOSTON AND MAINE R. R.
STANDARD
SIGNAL LOCK.
FULL SIZE DETAIL.

APPPOVED. J. H. Mueller
SIGNAL ENGINEER.

PLAN	
DRAWN JJR	
CHECK JJR	
CORRECT CMB	
ISSUE	DATE
A	5-8-36
B	11-26-38

P557
D



NOTE - CONCRETE PRECAST. B&M.RR STANDARD SPECIFICATIONS MIX 1-2-4 REINFORCING STEELCRETE MESH OR EQUAL.
BOLTS-1" GALVANIZED.
WEIGHT - TOTAL 2500± LBS.

BOSTON AND MAINE RAILROAD

SIGNAL FOUNDATION

SINGLE UNIT COLOR LIGHT SIGNAL WITHOUT CASE.

APPROVED

SIGNAL ENGINEER

SCALE:-
1" = 12"

DRAWN: E.P.E.	
CHECKED:	
CORRECT:	
ISSUE	DATE
A	5-27-40
B	10-30-41

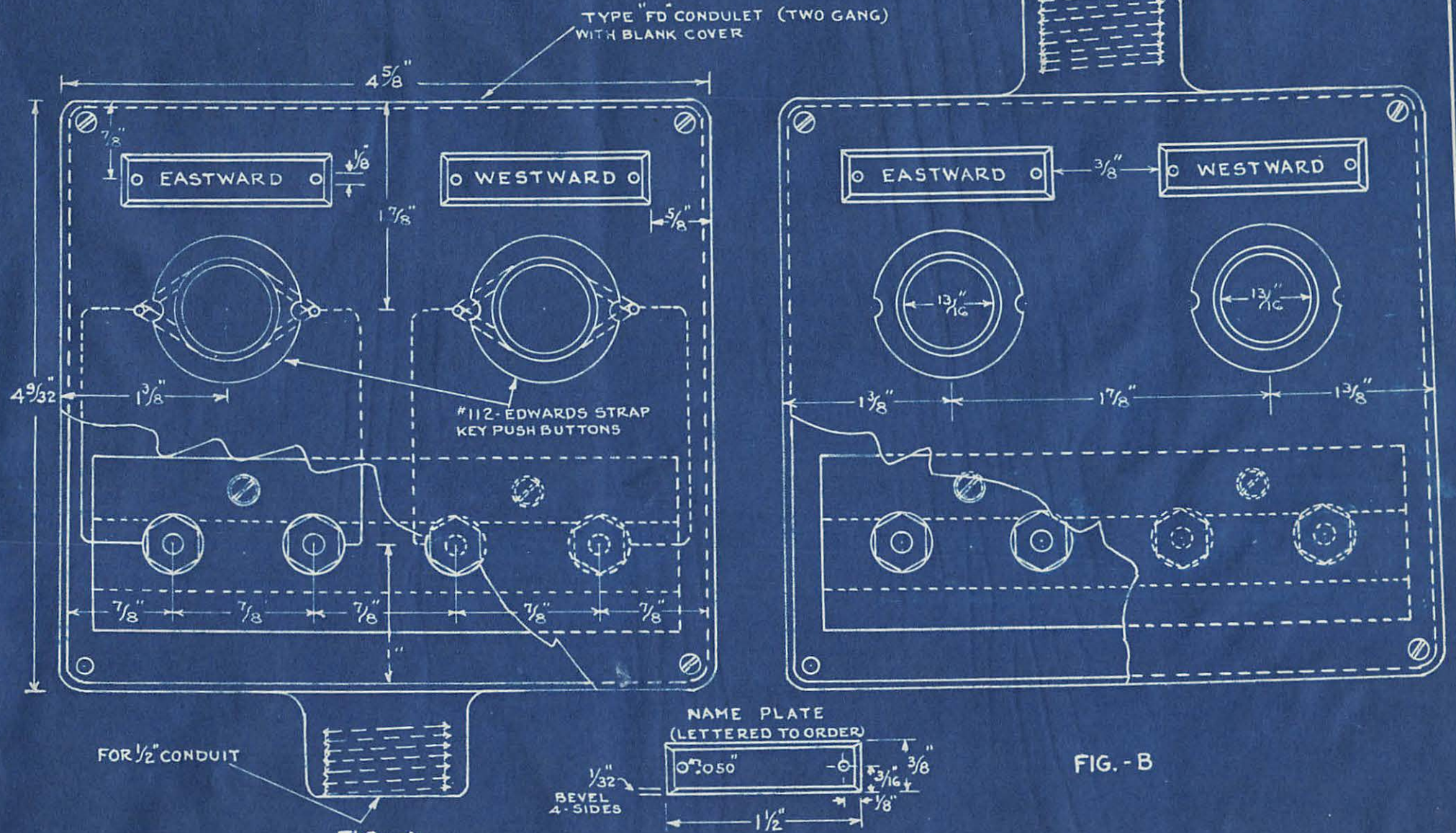
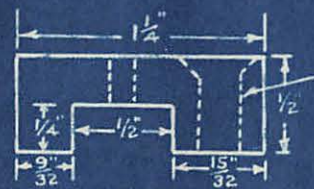


FIG. - A



END VIEW OF MICARTA

USE TERMINAL POSTS
A.A.R-107010 - 1 1/2 LONG

WORDING AND POSITION OF NAME
PLATE TO BE SHOWN AS REQUIRED.
MAKE FROM 1/16 MICARTA (SATIN FINISHED)

FIG. - B

BOSTON AND MAINE R.R.
DOUBLE PUSH BUTTON UNIT FOR
APPROACH WARNING BELLS
NOT TO SCALE

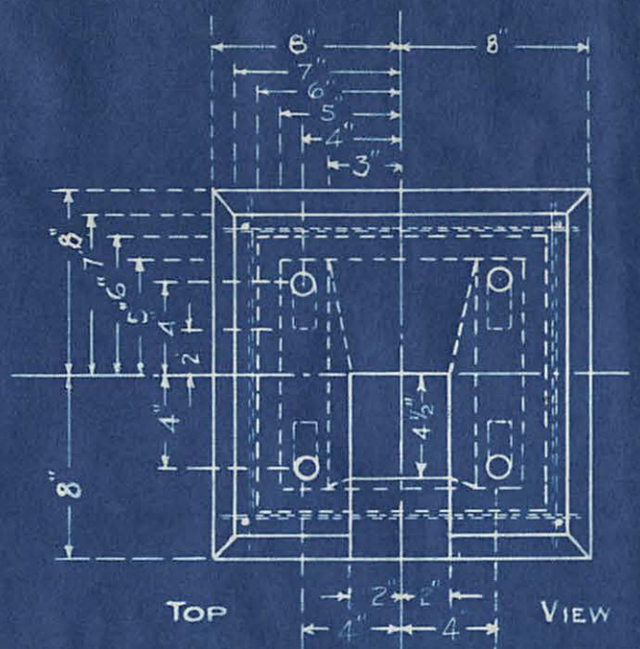
APPROVED: _____
ENGINEER OF SIGNALS AND TELEGRAPH

Drawn	E.M.H.
Checked	C.M.F.
Correct	C.M.F.

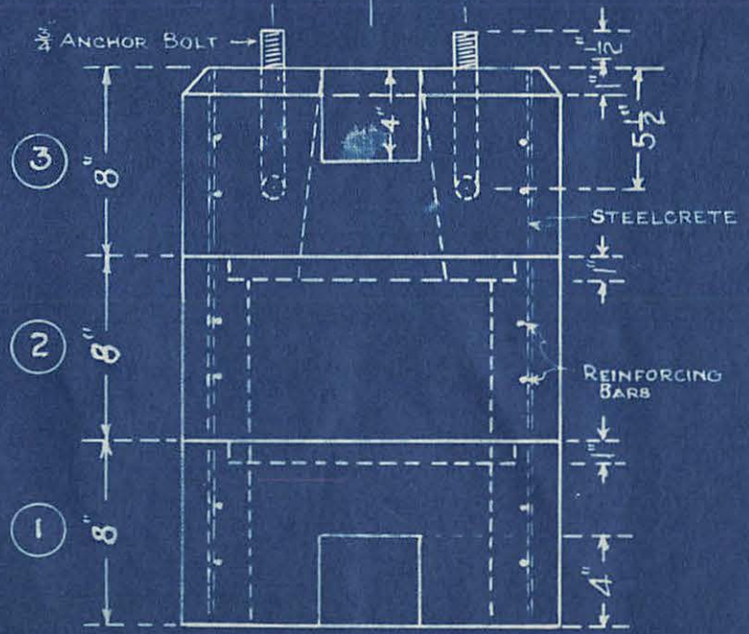
ISSUE	DATE
A	2-17-42
B	4-16-42
C	2-21-44

B - Volume & Weight

P601D



¾" Anchor Bolt - Std. Hex. Nut with Washer - ¾" 10 U.S. Std. Thread



Side View

Section	Volume	Weight
3	1.02 cu ft.	158 lbs±
2	0.72 " "	112 " ±
1	0.66 " "	102 " ±

Boston and Maine R.R.
Searchlight Dwarf Signal Precast Foundation

Approved: _____
Engineer of Signals and Telegraph.

Concrete - Boston and Maine R.R. Standard Specifications 3000# class

RECEIVED
MAILING DEPT.
JUL 12 1949
AM
Ans'd
Date

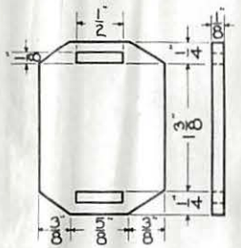
PLAN	
DRAWN BY: A.S.M	
CHECKED: R.L.A	
CORRECT: J.J.R	
ISSUE	DATE
A	5-23-30

R1

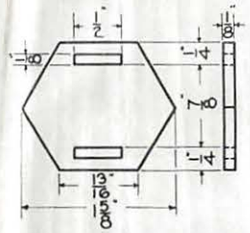
SWITCH NUMBER PLATE

NOTE

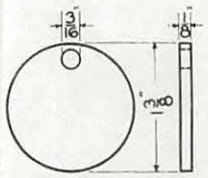
SWITCH NUMBER PLATES TO BE OF #16 B.W.G. SHEET IRON. 6-1/4" HOLES SHALL BE DRILLED PRIOR TO PAINTING PLATE. PLATE SHALL BE PAINTED WITH TWO COATS OF OUTSIDE WHITE PAINT, WITH 3/16" BLACK BORDER AND BLACK LETTERING.



TO BE USED FOR A.C. OR D.C. SUPPLY CABLES-750 VOLTS OR LESS



TO BE USED FOR PRIMARY OR HIGH TENSION CABLES OVER 750 VOLTS



TO BE USED FOR COMMUNICATION AND CONTROL CABLES

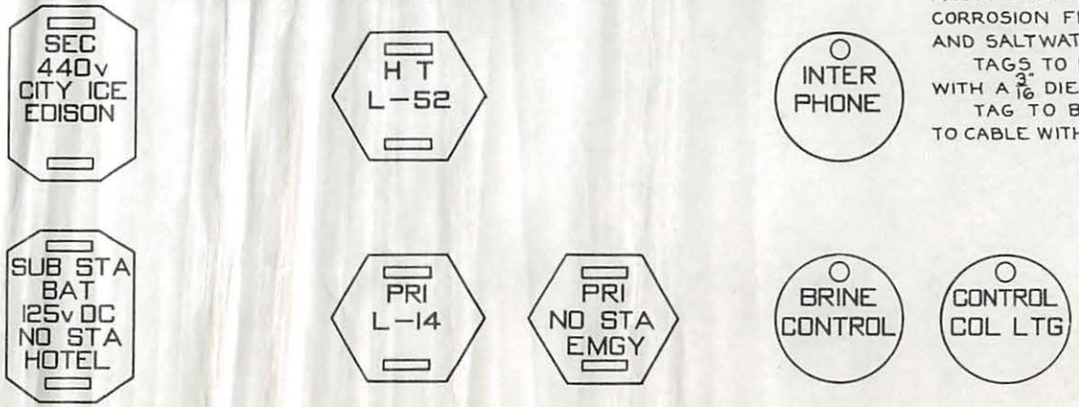
DETAILS OF CABLE IDENTIFICATION TAGS

NOTE

TAGS TO CONSIST OF A LEAD ALLOY THAT WILL RESIST CORROSION FROM UNDERGROUND AND SALTWATER CONDITIONS.

TAGS TO BE LETTERED WITH A 3/16" DIE.

TAG TO BE ATTACHED TO CABLE WITH LEAD STRAP.



TYPICAL LETTERING FOR CABLE IDENTIFICATION TAGS

BOSTON & MAINE R. R.

STANDARD SWITCH NUMBER PLATE CABLE IDENTIFICATION TAGS FOR ELECTRICAL SYSTEMS

APPROVED

D. McBurchett
ELECTRICAL ENGINEER

CHIEF ENGINEER